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A Huge Rubber Rebate

DURING and immediately following the Civil War rubber manufacturers paid a considerable sum in direct taxes on their products to the federal government. It is now contended that such taxes were illegally levied and in contravention of the Constitution, which sanctions only a per capita direct tax, instead of an impost levied immediately on manufactured articles.

Many manufacturers are now arranging through the authorities of various states to make a joint test of the Civil War period enactments to recover such taxes, the claims filed thus far totaling nearly $300,000,000.

The federal tax law to which, with its amendments, exception is being taken was enacted July 1, 1862, and it specifically levied on "all manufactures of gutta percha and India rubber a duty of 3 per cent ad valorem." This was assessable on and payable directly by the makers of such goods, who were also required to make monthly returns to the federal assessor beginning August 1, 1862. Subsequently, returns were required but once a year.

Two years later (June 30, 1864), the duty on gutta percha and India rubber goods was raised to 5 per cent ad valorem.

On July 13, 1866, there was added a clause to the original revenue measure requiring a tax of 5 per cent ad valorem to be paid also on "any parts of clothing manufactured of India rubber or gutta percha."

Next the federal government, on March 2, 1867, amended the law so as to also impose a tax of 2 per cent ad valorem "on boots and shoes made wholly or in part of India rubber, but exempting soles and heel taps of India rubber."

On March 31, 1868, all direct taxes on rubber and nearly all other manufactures were abolished.

The amounts collected by the government in direct tax on manufactured articles of India rubber and gutta percha were as follows:

	Gutta Percha	India Rubber
1863	$5,087.44	$112,700.15
1864	5,435.06	223,782.85
1865	31,282.38	635,075.87
1866	7,937.88	555,842.30
1867	5,146.31	391,003.06
1868	2,683.81	249,772.46
Total	$57,572.88	$2,168,176.69

In 1890 there were 29 rubber companies, with annual products amounting to $5,768,450; while in 1870 there were 56 concerns, whose production totaled $14,566,374.

Of course the majority of today's larger companies were not in existence during the period named. Then, too, some, like the Hayward Rubber Co., no longer exist. But seven or eight of the subsidiary companies of the United States Rubber Co. were then big and prosperous. Such pioneer companies as the Hodgman Rubber Co., the Gutta Percha & Rubber Manufacturing Co., and the Boston Belting Co., contributed their bit. To them and a few others should come a substantial rebate, particularly if interest be added.

Patents or Secrets

THE United States Patent Office is a great and valuable institution. It affords "protection" for thousands of worthy inventors who might otherwise be helpless against

infringers, adapters, and claim jumpers. It possesses the unwavering respect and faith of the innocent, the tolerant contempt of the wise and wary.

The fault lies not with the personnel who administer its affairs, but with the system under which patents are granted. Under it almost anything can be patented, and no governmental protection is given in exchange for moneys paid.

This has resulted in a masking of the real crux of the patent by floods of claims, oceans of words, and often false descriptions. The attitude of the office theoretically is a promise that if an inventor discloses a secret, pays a fee, and receives his recorded document the result will be complete protection for a period of years. In the last there is only failure. Thus a premium is put upon deception, and a very definite bar placed in the way of progress.

This is by no means a recent discovery. It has been orated about, written up, and considered for years. Patent Office reform has been a battle cry for years. But nothing is done.

Meanwhile millions of dollars are contributed by patriotic Americans for patents that do not protect, for patent lawyers who are past masters in intricate and foggy descriptions, and for lawsuits that in all equity should be thrown out of court without argument.

Secret formulas for German aniline dyes which were seized by the alien property custodian when this country entered the World War were found to be false when American chemists attempted to use them, declared Robert W. Neff. The German formulas were on file in the United States Patent Office for the supposed protection of copyright. They were not, however, the real formulas, as the German dye manufacturers preferred to take the chance of having their processes duplicated without redress at law rather than to allow access to them even under the secrecy of the United States Patent Office.

Not only were they false, but a misleading formula for a world-famous prophylactic was also on file in the patent office. Repeated attempts to use the German formulas or to discover what was wrong with them proved fruitless, for they produced everything except the dye sought.

An American chemist who had studied under the famous Erlich, in whose laboratory at Berlin the prophylactic was devised, then applied himself to its production and succeeded in making a product said to be even better than that of the famous German chemist.

Insulating for Long Life

THAT rubber soles cause gout, eczema, catarrh, and other ills is the opinion of Dr. Johan Werner. His views, appearing first in a Norwegian paper, have been reprinted in various British publications with extended comments pro and con. That the learned writer is sincere in his position is freely admitted. That he is right is not proven. Nor, except in isolated cases, will his dictum prevent the spread of rubber sole wearing. The incident is but a repetition of attacks that once were launched against rubber overshoes. The "galosh" was accused of causing almost every conceivable ill, from corns to convulsions. It was claimed that the wearer insulated from the life-giving "earth currents" was shortening life and bottling up disease. Nevertheless civilized man more and more adopted this defense against wet feet.

And now imagination's pendulum swings to the other extreme. A scientist claims that the earth currents are not life but death givers. That old age and death are caused by radiations from the earth which in time destroy human tissues. Those who are strongly resistant live long, and only those. If one were thoroughly insulated against these radio-active rays life would be prolonged indefinitely. Thus it is possible that the rubber sole, crêpe or compound, is not a cause of disease, but a potent protection against the subtle but powerful forces of destruction that pour from the bosom of mother earth. The thorium, uranium, and actinium series, of which radium is the best known, would seem to be bombarding man day and night and limiting him to a paltry three score and ten years of life.

In the laboratory rubber gloves, aprons, and sheets render radium harmless, pointing to a practical protection for all mankind, through a much greater use of rubber: rubber soles, shoes, gaiters, coats, hats, mattresses, flooring, indeed complete insulation, resulting in comfort, long life—and larger dividends.

The "Belting Company" Passes

THE news that the Boston Belting Co. has gone into liquidation shocks one like the passing of an old and much venerated friend.

For more than ninety years it has been known as a pioneer and leader in mechanical goods. Dating back to the days of the Roxbury Rubber Works, to the era that preceded the discovery of vulcanization, and from that time growing in wealth and influence, the whole history of rubber development was typified in its career.

About it and of it are many names that are household words in the industry: Goodyear, Chafee, McBurney, Cheever, Durant, and the brothers Forsyth. It was the home of invention, the maker of wealth, the one-time ideal of conservative progress and industrial soundness. But the founders are gone, the guiding spirits are no more. Henceforth the great company remains only a chapter in rubber history.

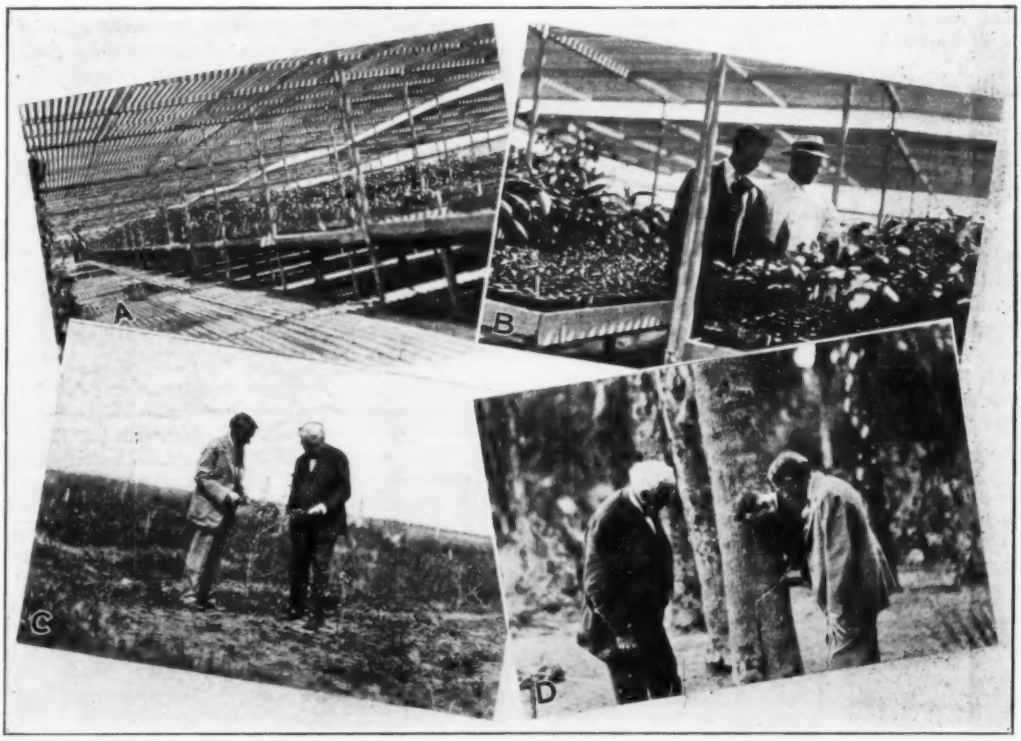
HEXAMETHYLENE TETRAMINE, THE MUCH-USED RUBBER accelerator, is urotropin, or formaldehyde ammonia 6:4, the uric acid solvent of the U. S. Pharmacopæia. In the masks of the Allies it saved a host of soldiers from suffocation with phosgene gas from enemy shells.

AS WE HAVE THEREFORE OPPORTUNITY, LET US DO GOOD unto all men. Galatians 6: 10.

Hevea Planting Experiments in Florida

Firestone, Ford and Edison Cooperating with the Department of Agriculture in Rubber Cultivation Research Work in Florida—Climatic Conditions and Cultural Experiments Favorable to Commercial Production When the Most Adaptable Rubber Plant and Extraction Method Are Determined

RECENT developments in Florida now give promise that in years to come the "Peninsula State" may become as well known for its rubber as for its oranges, indeed may even be called the "Rubber State." That American grown crude rubber in quantity, and other than the guayule of the Southwest, may soon become an actuality seems almost like an impossible dream, yet with such wizards in their respective lines as Firestone, Ford and Edison backing the project, the seemingly impossible may be confidently expected to happen. Meanwhile the story of progress to date is an interesting one.



(A) POTTED HEVEA PLANTS AT CHAPMAN FIELD. (B) RUSSELL FIRESTONE AND ALFRED KEYES INSPECTING PLANTS. (C) MESSRS. FIRESTONE AND EDISON EXAMINING HEVEA SEEDLINGS ON HENRY FORD'S ESTATE. (D) TAPPING A RUBBER TREE ON EDISON'S ESTATE.

Firestone Leadership Toward American Grown Rubber

In 1922 when the Stevenson act restricting the production and exportation of rubber produced within the British Empire was about to become effective as a means of controlling prices, Harvey S. Firestone, the Akron tire manufacturer, took the lead in the agitation of American rubber interests against the plan. When it became certain that nothing could prevent its adoption, he began circulating the slogan, "Americans should produce their own rubber," and pointed out the anomalous position of the United States, which consumes 75 per cent of the world's total production of crude rubber yet produces only 2 per cent, and none of that under the United States flag. He emphasized the fact that 80 per cent of the world's rubber supply is under British control and 18 per cent under Dutch control, so that although the United States is the biggest consumer, the great American rubber industry is entirely at the mercy of England, the biggest producer. This, he stated, was a bad enough situation under restriction in times of peace, and in wartime might become a serious menace to the American rubber industry.

Mr. Firestone declared that the British restriction and Dutch tariff upon rubber production and exportation would have serious effects upon American rubber goods manufacture, especially the tire branch of the industry, which consumes 80 per cent of all the rubber brought into this country. And today, with British plantations producing only half the normal crop, the price of the raw material is over 200 per cent higher than at the time the Stevenson act became effective in 1923. That tires and other rubber products are not now proportionately more costly can be traced to the drastic measures to lower manufacturing costs in American factories. But

as the supply is diminishing at the same time that the demand for rubber products, especially tires, is increasing, there is grave likelihood of a shortage and much higher prices in a few years. Rubber restriction this year will cost American car owners from $100,000,000 to $300,000,000, Mr. Firestone estimates. Every 10-cent advance in the cost of crude rubber means an additional burden of about $75,000,000 loaded upon the American people.

Firestone Rubber Investigating Expeditions

To ascertain at first hand about the rubber growing possibilities of our own tropical possessions and other friendly countries, Mr. Firestone fitted out at his own expense investigating expeditions to many parts of the world, including the Philippines, Hawaii, Central America, Mexico and the West Coast of Africa. Extensive surveys in Liberia give encouragement that this little republic may yet supply a liberal quantity of crude rubber to America. A complete Firestone organization is already on the ground preparing to plant rubber on an extensive scale.

United States Government Research and Experiment

As part of his campaign against domination of America's crude rubber supply, Mr. Firestone pleaded with the United States Government to aid in giving American manufacturers a source of supply under their own control and at least to a certain extent in American territory. Congress subsequently apportioned $400,000 to the Department of Commerce for investigation of new sources of rubber supply and $100,000 to the Department of Agriculture for experimental purposes in localities possibly suitable for growing rubber trees. A preliminary report of the results of the government surveys and experiments is expected to be issued some time this spring.

It was realized at the outset that within the borders of the United States rubber, apart from shrubs similar to guayule, could be grown only under sub-tropical conditions, which exist only in Florida and southern California. The latter was hardly to be considered as practical commercially for several reasons. Owing to the mountainous character of much of the state few areas suitable for plantation purposes are available. Moreover, rainfall and humidity are insufficient and not well distributed through the year, there being a pronounced rainy and dry season.

Southern Florida, on the other hand, is low and relatively flat, with no mountains. It is warm throughout the year and has a more evenly distributed rainfall. While the precipitation does not approach that of the Amazon valley or the rubber growing regions of the East, it is apparently ample to support numerous rubber yielding trees which are indigenous. In the Everglades region great low-lying areas adjoining the swamps possess constant subsoil moisture which may prove the redeeming feature to offset lack of rainfall and make rubber growing possible under conditions approaching those in parts of Brazil.

Government Experimental Station at Chapman Field

Taking these facts into consideration, the federal government gave the Department of Agriculture a strip of land near Coconut Grove, formerly the airplane landing station known as Chapman Field, for experimental purposes. Owing to its former use, this land is not in an encouraging state of fertility, yet under the able direction of Alfred Keyes thousands of rubber yielding plants and trees of many different varieties are being grown and have shown surprising growth and health. Experiments with Hevea, the best rubber yielding tree known, have thus far been very encouraging.

Edison and Ford Experiments in Florida

Thomas A. Edison, the electrical wizard, has long been a winter resident of Fort Meyers, and on his estate some very promising rubber trees are growing. His interest in this problem is very keen and the experiments he is conducting in mechanical latex extraction may one day revolutionize common practice for the benefit of the American rubber industry.

Encouraged by the Edison and government experiments, and the fact that trees and plants yielding commercially usable rubber are growing practically all over southern Florida today, Henry Ford, the automobile manufacturer, recently bought 8,700 acres of land at Labelle, about 30 miles from Fort Meyers on the West Coast, and his experts have planted dozens of varieties of rubber trees. The growth and productivity of these plants are being carefully watched and experiments made to determine the best way of making them yield crude rubber on a paying basis.

Firestone Investigation of Florida Possibilities

Great impetus to American consideration of Florida as a rubber producing state has recently been given by a tour of investigation lasting several weeks conducted by Harvey S. Firestone. Accompanied by Mr. Edison, one of Mr. Ford's tree experts and M. A. Cheek, who has been identified with the Firestone interests in the East for fifteen years and understands rubber production thoroughly, he visited the Edison and Ford estates and the government experimental station. Several sections of the state were visited, including the Everglades, soil was examined, rainfall data secured, climatic conditions studied and the growth of native rubber trees and various other features concerning commercial rubber production observed.

Mr. Firestone's Statement

Following this tour of investigation Mr. Firestone issued a statement which gives promise of early rubber developments of far reaching importance in Florida. It is in part as follows:

"Just what the result of our Florida experiences will be is not yet ready for announcement, but I can say that to date we feel greatly encouraged over our efforts in ascertaining the possibilities of this state as a source of rubber supply.

"We believe we have found in Florida several varieties of rubber trees, vines and shrubs capable of cultivation on a commercially paying basis. We feel sure that of approximately 600 rubber-yielding plants known to exist today about 100 will grow in suitably selected localities in this state. Of these 100 varieties indications point to many with promising possibilities of economic use. They seem to be not alone capable of cultivation but also of producing rubber in quantities and at costs of production which should actually make them commercially profitable.

"It is quite possible, however, according to our experts, that some means of extracting the latex might be employed which is different from the methods employed in the Far East and other rubber growing areas—and these new methods may prove even more effective.

"We believe certain species of varieties of rubber plants in Florida are susceptible of mechanical handling, obviating the manual means now in vogue in foreign countries where rubber is produced.

"This mechanical handling, it is safe to assume, would increase as well as hasten yields, materially reducing cost of production."

Florida Climatic Conditions Favorable

M. A. Cheek, the Firestone expert, asserts that the climatic conditions, soil texture and contents, rainfall and extent of moisture in these localities make the cultivation of rubber trees on a large scale possible. There is no doubt that rubber trees of a large number of varieties can be grown in this state. No plantations have yet been started because the type of plant to be used and the methods to be applied have not yet been decided on.

Hevea May Have to Be Abandoned

As an example of the problems confronting the investigators, take the Hevea tree, considered as about the best rubber producing plant known. The prevalent method of obtaining the latex from this tree is that of tapping by hand, and under the cheap labor conditions found in the Far East the operation is profitable.

However, the price of labor is going up and unless some other way of obtaining the yield from the Hevea can be found, the cultivation of this type of plant may have to be abandoned.

Latex Must Be Obtained Mechanically

The cost of labor in Florida would prevent profitable cultivation of the Hevea, although experiments at Chapman Field show that it can be grown here. If, however, another way of separating the latex from the tree can be discovered, it may be that the Hevea would be chosen for intensive cultivation in Florida.

Mr. Cheek intimated that efforts are under way to invent a mechanical process for obtaining latex from the Hevea and other trees, thus eliminating the manual labor problem. The engineering staffs of the Edison and Ford companies are working upon this angle of the situation, which should hold out material hope for success.

Significance to Florida and the Nation

Not only would the successful commercial cultivation of rubber in Florida be a distinct economic contribution to the national welfare, providing a supply of raw material close at hand under American control and tending to stabilize the crude rubber market as well as rubber goods prices, but it would be of vast importance to Florida from a development point of view, especially in regard to opening up the Everglades for a yield of raw materials. It would put thousands of acres under cultivation, bring added capital to swell the state's prosperity, and give employment to hundreds of men. The growing significance of Florida as a producing center would be immeasurably enhanced.

American Rubber Needs and Florida Possibilities

It is hoped that American interests will ultimately control from 40 to 50 per cent of the world's rubber supply, or at least of the sources whence will come the raw material necessary for its factories. America is slated to consume about 365,000 tons of crude rubber in 1925. The average per acre yield in the rubber plantations of the East is about 300 pounds, so that it will require the product of 2,725,300 acres to satisfy the United States rubber demand.

Next year the consumption will be even greater, it is thought, so that it has become, to say the least, a pressing necessity for American manufacturers to find available rubber yielding acreage at the earliest possible moment.

Much of the necessary acreage is available, it is believed, in and about the Everglades. This great so-called "lake," some of it inundated and including much swamp, but much low-lying land besides, and most of it capable of drainage, comprises some 8,000 square miles or 5,120,000 acres. On this now valueless area, when suitably reclaimed, may yet be grown an adequate crude rubber supply under the American flag and by original American methods.

Typical Organic Accelerators[1]

Popular Accelerators Classified by Curing Activity—Their Physical Properties—Selection for Milling and Curing Effects—Tensile Properties and Aging Qualities of Cured Products

FROM the point of view of the rubber chemist and rubber compounder accelerators of vulcanization may be classified as to their activity as ultra rapid, rapid, moderate, and slow.

Ultra Rapid Accelerators

The uses for ultra rapid accelerators are rather limited. They are useful in stocks requiring only a small amount of milling or working, cement stocks, quick repair stocks, dipped goods, crêpe soles and, to a small extent, in thick articles made up by laminating thin sheets containing only sulphur and only accelerator alternately. Broadly speaking, this class is not suitable for general tire work, molded goods, calendered stock nor any stock allowed to stand for an appreciable time before vulcanizing.

Piperidine pentamethylene dithio carbamate, frequently 'erroneously called piperidine piperidyl dithio carbamate, is ultra rapid. It is a white crystalline body which decomposes slightly upon long exposure to moist air. When compounded in a zinc stock it will produce a vulcanized article in two to three days at room temperature, or it may be vulcanized in from three to ten minutes at ten pounds steam pressure.

Rapid Accelerators

Rapid accelerators have a very broad field of usefulness. They may be used for skim and friction stocks in tires; for many mechanical goods which do not require too much milling at high temperatures; for heels, soles, boots and shoes; for belting, hose and tubing, mats, flooring, toys and druggists' sundries. With care they may be used for inner tubes.

Diphenyl guanidine, ethylidine aniline and "Tensilac 40" are in this class.

[1] Data from The Roessler & Hasslacher Chemical Co., New York, N. Y.

Diphenyl Guanidine

Diphenyl guanidine is particularly adapted to white boots and shoes, hospital sheetings, mechanical goods and druggists' sundries. It is used with great success in inner tubes and hard rubber. It should be used with caution in tread stocks because of its great activity. It is white, crystalline, odorless, non-poisonous to operators, non-hygroscopic, and will not readily scorch. It mixes freely through the rubber batch, and is unsurpassed for any white stock.

In pure gum stocks diphenyl guanidine works best with low percentages of sulphur. Although this material is most efficient in the presence of 3 per cent sulphur, very good tensiles may be produced with as low as 1½ per cent sulphur. When used in a high zinc stock, particularly in the presence of a relatively high sulphur content, it becomes very active and vulcanization occurs in much less time.

Ethylidine Aniline

This material has become a favorite for many classes of goods, particularly molded soles and shoe stocks and is preferred by some for tire stocks. It is more active than diphenyl guanidine and vulcanizes at slightly lower temperatures. For that reason care must be taken to prevent scorching on the mills. Stocks made with this accelerator have very good aging properties and in this respect are better than those cured with many other accelerators.

Ethylidine aniline is a dark, viscous, high-boiling liquid. It is conveniently handled in a master batch, but this is not necessary. Many users keep it warm so that it will pour easily from a can with a spout. It fluxes readily with the rubber and acts as a softener to a small degree. Its best results are obtained in the presence of 3 to 5 per cent sulphur and it should be used in the

proportion of ¾ per cent to 1 per cent of the gum content of the batch.

Tensilac 40

This accelerator is less liable to scorch than ethylidine aniline or diphenyl guanidine and for this reason may be safely used in calendered tire stocks. Also it may be used anywhere that ethylidine aniline is used, as well as where ethylidine aniline tends to scorch. It exhibits a broad, flat, vulcanization curve which shows it to be adaptable to critical stocks where slight over-vulcanization would otherwise ruin the product. It produces stocks remarkably resistant to aging.

Tensilac 40 is a dark brown, finely powdered resin which in accelerating activity falls between ethylidine aniline and diphenyl guanidine.

Its softening point is considerably below the temperatures ordinarily used in milling, and on this account when compounded into rubber it fluxes immediately into the stock with perfect dispersion. For the same reason the powder is liable to lump up in the container if stored in a warm place. These lumps, however, are not detrimental and may be easily broken up and added to the batch.

Moderate Accelerators

There is no sharp line of demarcation between rapid and moderate accelerators, since differences in compounding can throw the accelerator from one class to the other. Hexamethylene tetramine and aldehyde ammonia comprise this class.

Hexamethylene Tetramine

The use of this accelerator is very broad. Generally it may be used in any stock except hard rubber. It is particularly useful in red tube stocks since it works well with antimonies producing brilliant shades. Due to its inactivity at low temperatures it is one of the most easily worked accelerators in use; no burning or scorching even on very hot rolls. For plants having poor cooling water facilities it is the only safe material to use for calendering.

It may be used for all stocks in a tire since with a proper warming up period the entire carcass and tread vulcanize uniformly. It is widely used for mechanicals, including insulated wire, belting, etc. For white boots it is considered by many to be unsurpassed by any other accelerator.

Hexamethylene tetramine is a white crystalline powder, practically odorless, slightly hygroscopic, and extremely stable. When kept in sealed containers it may be preserved indefinitely.

Aldehyde Ammonia

The principal use of aldehyde ammonia is in skim and friction, but it is also largely used in tread stocks. It needs no auxiliary mineral filler to activate it, as it works excellently in pure gum stock containing no material other than rubber, sulphur and accelerator.

Aldehyde ammonia is a fine, white, free flowing powder, entirely free from gumming impurities, whose purity can be determined at all times. It is stable, and if kept in sealed containers will keep indefinitely. It can best be added in a master batch making up about a 15 per cent batch. It does not produce scorching, nor is it active at low temperatures.

Slow Accelerators

The slow accelerators are thiocarbanilid, formaldehyde-aniline, and triphenyl guanidine. They are used where a long cure is preferred, and are particularly useful in tire stocks when such a cure is desired. The tensiles produced by these accelerators in general are not so high as with the more active accelerators, but they are much safer to use in avoiding over-curing.

Thiocarbanilid

This accelerator is very widely used. It is suitable only for very long cures, unless high percentages are used, in which case the unit cost of the cured rubber rises higher than if a small quantity of a more powerful accelerator were used.

Thiocarbanilid is a white or light gray powder melting at about the temperature of vulcanization. It keeps well, is non-hygroscopic, and is readily compounded in the rubber. Although classed as a slow accelerator it is very liable to cause scorching on the rolls. To overcome this tendency a little aniline oil or other suitable softener may be used.

Formaldehyde Aniline

This material is sometimes used with accelerators that produce scorching, to overcome their scorching effect. For this purpose it is often used with thiocarbanilid. It has also been used successfully with hexamethylene tetramine and aldehyde ammonia. It has another special feature in that it produces stocks which exhibit the knotting effect to a marked degree. This makes it particularly good for treads and side walls. When compounded in inner tubes it produces a stock that does not tear when a slight cut is received.

Formaldehyde aniline is a peculiar, but useful, mild accelerator. It is a white or cream colored powder, insoluble in water, non-toxic and non-hygroscopic. It may be mixed with the rubber without making a master batch and will distribute evenly through the rubber very readily. Although a dry powder with a high melting point it softens the rubber decidedly during mixing.

It produces best results alone in a low zinc stock when 5 per cent or more of sulphur is used.

Triphenyl Guanidine

This mild accelerator is becoming increasingly popular. Its primary and almost only use is for tire stocks.

It is a white, odorless powder melting at about the temperature of vulcanization. No special precautions are needed in its use as it does not scorch nor give any other trouble in mixing. Its field is that in which a long slow cure is preferred as by some tire manufacturers. Its aging properties are very good. It should be used in about the proportion of 2 parts with 5 parts of sulphur to 100 of rubber.

AMERICAN TIRES POPULAR IN BELGIUM

American exports to Belgium of tires and inner tubes doubled in value during 1924 as compared with 1923, the totals being $240,211 and $113,381, respectively. Detailed statements for 1923 include a value of $104,382 for casings, $8,789 for inner tubes, and $210 for solid tires. The 1924 figures were: $218,945 for casings; $20,563 for inner tubes; and $703 for solid tires.

BRAZIL'S RUBBER EXPORTS

Statistics published by the Brazilian Government regarding that country's exports and imports of various commodities in recent years include the following:

Exports	1919	1920	1921	1922	1923
Seringa (Hevea).kilog.	32,213,311	22,876,323	17,070,869	19,212,424	17,033,604
Mangabeira.....	56,382	11,573	4,178	38,449	160,396
Maniçoba	945,583	649,157	253,173	334,849	485,974
Balata	36,118	46,878	103,611	268,880	310,809

THE BUREAU OF PUBLIC ROADS, UNITED STATES DEPARTMENT OF Agriculture, has prepared statistics which show that, with a 17 per cent increase in 1924 in American registration of motor vehicles, there is now in this country one motor car to every seven persons. These compilations also indicate that New York State owns the largest number of cars and trucks, approximately 1,412,000, while California, at 1,319,394, leads in numerical increase. Louisiana at 30 per cent represents the largest gain in registration. The number of motor vehicles registered in the United States in 1924 totaled 17,591,981.

Drop Center Tires and Rims

The Latest Refinements in Balloon Tire Equipment—What Drop Center Tires and Rims Are and the Advantages Claimed for Them

TIRE, rim and wheel development never ceases. Adoption of a new basic principle, with its inevitable advantages and disadvantages, quickly brings refinements for its improvement, and they in turn often point the way to new basic principles. And so the never-ending cycle of progress continues.

The numerous manifest advantages of wire and disk wheels have within a short time brought the demountable wheel into widespread use, yet many prefer four-wheel equipment with demountable rims to five-wheel equipment, and for them engineering progress has provided such optional equipment. Others prefer the artillery wood wheels which have long given satisfaction, and engineering progress still adapts them to the latest in demountable rims and balloon tires. The most common claim of those who prefer demountable rims to demountable wheels appears to be the lighter weight to be handled in making tire changes. And in this connection it is worthy of note that the trend of design in both wheels and rims has long been to secure adequate strength with reduced weight.

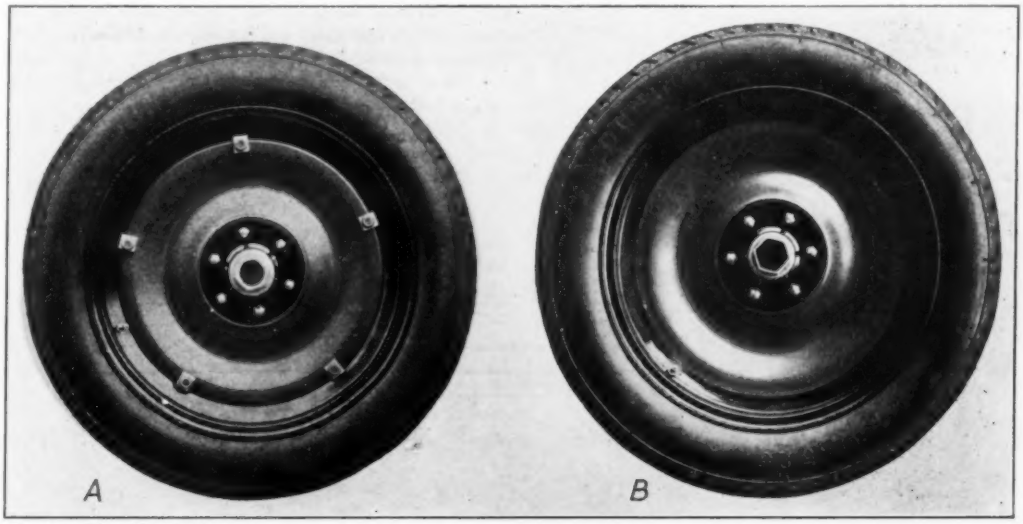
Balloon Tire Wheel and Rim Changes

The advent of the balloon tire was revoluntionary not only in itself but in its demand for special wheels and rims of smaller diameter and rims of greater width. Engineering progress is gradually modifying the details of these necessary changes, but absolute size standardization is not to be hoped for until more experience has been had with the various types and sizes now in use.

Considerable disagreement persists as to the relative merits of wide and narrow rims for balloon tires. Although the advocates of the narrow rim cite better and less localized flexing and therefore better cushioning, with no unsatisfactory front-end performance, if synchronized vibrations are cared for elsewhere, their best established claims are lower weights and costs. On the other hand, the champions of the wide rim claim with apparent justice greater carrying capacity because of greater air volume, greater stability, less side swaying on turns, and perhaps less bead and rim strain, less destruction to tires if run flat, and possibly easier steering.

Drop Center Rims Wide and Light

To the aid of the wide rim advocates now come the new drop center tire and rim, which are merely refinements in the evolution of the balloon tire casing, tube and rim for their easier application and better service. Its name indicates the character of the drop center rim, which is clearly shown by the accompanying illustrations and cross-sectional drawings. Its main advantage is that it provides a wider rim for less weight and cost, also a total wheel cost much lower than heretofore, particularly in disk wheel construction. Such a drop center wheel will weigh at least 20 per cent less than a wood wheel. There is also a tire saving, as flaps are eliminated and the tire does not rust to the rim, as no water gets in, due to the perfect seal afforded by the special casing construction.



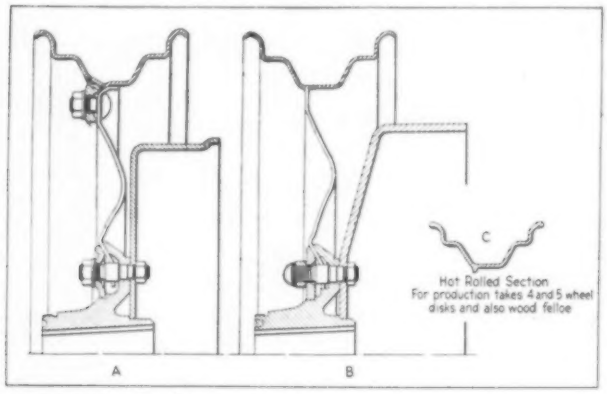
Courtesy Wire Wheel Corp.

FIG. 1. (A) FOUR-WHEEL TYPE DROP CENTER RIM AND TIRE DEMOUNTABLE AT HUB AND RIM. (B) FIVE-WHEEL TYPE DROP CENTER RIM AND TIRE DEMOUNTABLE AT HUB ONLY

Referring to Figure 1, A is a 21-inch base drop center rim type wheel equipped with a 5.25-inch Dunlop balloon tire. This is intended for four-wheel equipment, as indicated by the use of five drive lugs. It is demountable at hub and rim. B in Figure 1 is a drop center wheel demountable at the hub only, the disk being fastened to the rim rigidly. This is intended for five-wheel equipment. In both cases it will be noticed that the valve stem is attached on the side.

In Figure 2, A is a cross-sectional sketch of the four-wheel equipment type of drop center rim which to all intents and purposes is exactly the same as the Tire & Rim Association standard,

except that a groove has been rolled in the well of the drop center to make a bead, by virtue of which the rim can be clamped to the



Courtesy Wire Wheel Corp.

FIG. 2. (A) CROSS-SECTION FOUR-WHEEL TYPE DROP CENTER RIM CLAMPED TO DISK. (B) FIVE-WHEEL TYPE RIM WELDED TO DISK. (C) CONTOUR OF DROP CENTER RIM FOR WOOD OR DISK WHEELS

disk. B in Figure 2 shows the rim welded to the disk for five-wheel equipment.

It is believed that eventually the drop center will be made in hot rolled section, and when that time arrives it will be made according to the insert C in Figure 2, which will allow the rim to be used in connection with wood or disk wheels as a sort of universal rim.

Drop Center Tire Characteristics

The only difference in construction between the drop center balloon and the standard balloon tire is that the drop center tire has a soft rubber toe which forms itself to the curve of the drop center rim, but when used on a standard base it does the same horizontally and aids the flap. It also acts as a seal to keep water out, and is therefore a material improvement on standard tires.

Since the new Tire & Rim Association standards have been adopted, wherein the tire bead is held the same as in standard tires, and the rim base is increased 1/16-inch, it is evident that the tire seat is forced up on to the rim base by the air pressure and consequently fits much more tightly than the standard tire. Therefore the much anticipated difficulty of the tires coming off has not materialized.

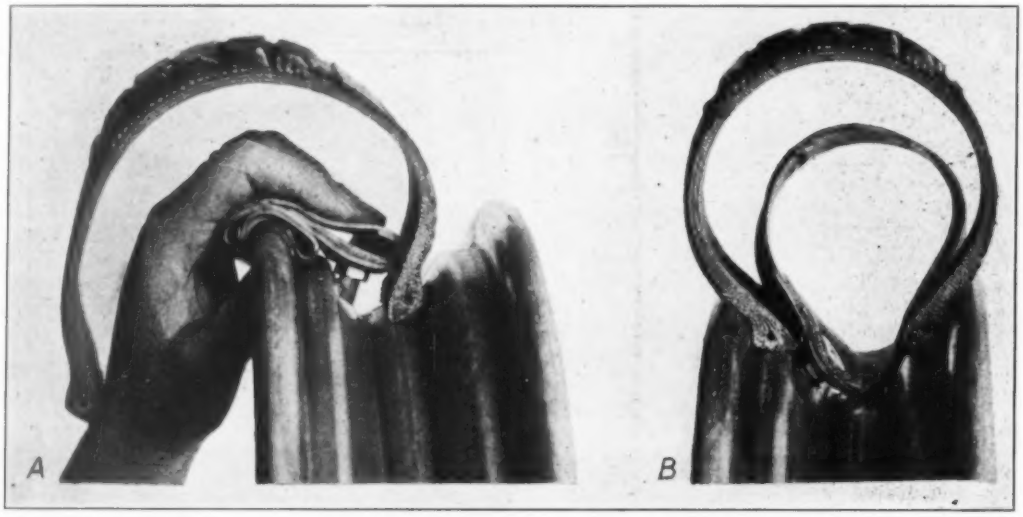
Drop Center Tube Characteristics

Drop center rim design permits the use of a short straight valve stem with disk wheels, the valve stem being attached to the tube slightly on the side. This facilitates the assembly of tire and tube on the rim. It is apparent that the shorter the valve stem is, the easier it is to get it in, because in the regular method of putting on a drop center tire and tube, as shown at A in Figure 3, the inner tire bead is put on the rim and the tube is then shoved inside of the rim. Next the tube is taken hold of, putting the hand around behind the valve stem and inside the tire carcass, and the valve stem pushed through the hole in the rim. Finally the outer tire bead is brought on to the rim, when tube and casing before inflation take the positions as shown at B in Figure 3.

It is evident that the longer the valve stem is the more chance it has to become cocked in the well, and also the farther in the hand must go to insert the stem in the rim hole.

A peculiar thing about drop center tubes is that if the tube is cut the standard length of the regular tube of the same size, the tube will expand into the tire first and then stretch down into the well, whereas, if about four or five inches is cut out of the length of the conventional tube and the tube is then made about one size larger it is found that the tube fits closely in the rim well, and as it is filled with air it expands into the well first and into the tire afterwards.

In the first case the stretch of the tube down into the well is excessive, while in the latter case it is normal. This accounts for the small amount of trouble which has been experienced by a few persons who have experimented with drop center rims and reported tube pinching.



Courtesy Wire Wheel Corp.

FIG. 3. (A) APPLYING DROP CENTER TIRE TO RIM—INSERTING VALVE STEM. (B) DROP CENTER TIRE AND TUBE IN PLACE—NOTE SOFT RUBBER BEAD TOE

Conclusions

In eliminating rim rust and flap complications drop center tires and rims represent a big forward step in balloon tire equipment. The tires have the advantage of being applicable to standard rims, and are flexible enough to be used even with six-ply construction. Moreover they are showing as long life as standard balloons.

United States Exports of Rubber Goods—1924

Increasing Value of Exports—Tire Casings Losing Ground—Factors Controlling Tire Prices and International Trade—Footwear Exports Heavy—Mechanical Goods Normal—Sundries and Specialties Increasing—Rubber Scrap and Reclaim Exports Growing

By E. G. Holt[1]

THE value of United States exports of rubber products in 1924 was $40,630,795, as compared with $36,972,125 in 1923 and $34,009,308 in 1922, thus maintaining in 1924 about the same rate of increase as in the previous year. The larger value of exports in 1924 is accounted for by increased shipments of all kinds of rubber footwear, solid tires and inner tubes, rubber thread, and higher selling prices for tires, rubber thread, and rubber sundries and specialties.

Export Tire Prices Higher in 1924 Than in 1923

The average unit value per automobile casing exported in 1924 was over $12; in 1923, the average was about $11.25, and although tire exports in 1924 numbered only 1,250,000 as compared with 1,363,000 in 1923, the value of the exports fell off but slightly. There was a similar increase (from $1.72 to $1.83) in the average price of inner tubes exported and from $24.50 to $26.20 in the average price of solid tires for automobiles, and in addition a greater quantity of tubes and solid tires was exported in 1924 than in 1923. There was also an increased trade in tire repair materials.

The following table shows total exports of tires and tire sundries from the United States as officially reported for 1922, 1923, and 1924:

EXPORTS OF TIRES AND TIRE SUNDRIES

Items	1922		1923		1924	
	Quantity	Value	Quantity	Value	Quantity	Value
Automobile casings, *number*	1,325,753	$16,604,637	1,362,741	$15,293,103	1,249,967	$15,072,708
Other casings, *number*	54,923	234,316	72,391	269,858	49,402	194,255
Automobile tubes, *number*	936,745	1,775,588	1,016,384	1,740,329	1,104,145	2,021,124
Other tubes, *number*	40,511	49,425	57,885	53,055	46,188	40,724
Automobile solid tires, *pounds*	55,665	1,518,932	96,847	2,376,235	102,782	2,690,819
Other solid tires, *pounds*	769,857	210,050	940,182	229,226	1,167,303	291,465
Tire accessories and repair materials, *pounds*	772,170	310,034	831,371	358,902	1,315,403	521,091

America Loses Ground in International Tire Trade

Fewer automobile casings were exported in 1924 than in either of the two preceding years. The United States has lost ground in the international tire trade since 1922 as shown by the following table.

During 1924, the exports from France and Italy increased while the exports from the United States and Canada declined slightly, although there was a constantly growing volume of exports from the United States during 1924 as compared with the last half of 1923.

The export tire trade, therefore, is principally a struggle between American and Canadian companies on the one side, and French and Italian companies on the other. American and Canadian exporters supplied 48.6 per cent of the total international trade in tires in 1920; 29.3 per cent in 1921; 41.6 per cent in 1922; 38.9 per cent in 1923; and in 1924 33.75 per cent. French and Italian companies supplied 33.2 per cent of the total in 1920; 51.7 per cent in 1921; 39.6 per cent in 1922; 42.2 per cent in 1923; and 48.25 per cent in 1924.

EXPORTS OF AUTOMOBILE CASINGS FROM PRODUCING COUNTRIES

[All figures in thousands]

Countries	1922		1923		1924	
	Number	Per cent	Number	Per cent	Number	Per cent
United States	[1]1,326	34.1	[1]1,363	28.8	[1]1,250	24.40
Canada	290	7.5	[1]480	10.1	[1]480	9.35
France	1,210	31.1	1,510	31.9	1,800	35.15
Italy	330	8.5	490	10.3	675	13.10
Great Britain	[1]271	7.0	[1]397	8.4	550	10.75
Germany	[1]192	5.0	[1]252	5.3	150	2.82
Japan	150	3.8	135	2.9	110	2.15
Belgium	70	1.8	72	1.5	90	1.75
Australia	17	0.4	15	0.3	14	0.26
Austria	18	0.5	13	0.3	10	0.18
Netherlands	[1]11	0.3	[1]8	0.2	5	0.9
Total	3,885	100.0	4,735	100.0	5,134	100.0

[1] Official statistics. All figures not noted as official are estimates based either on the weight or the value of exports.

Heavy Increase in Footwear Trade with Europe

Rubber footwear of all kinds was exported from the United States in greater quantities in 1924 than in either of the preceding years, the increase being less marked in canvas rubber-soled shoes than in other types. A very heavy increase was recorded in exports of rubber boots and shoes of all kinds to the United Kingdom, Denmark, and Austria. Trade with Japan and Norway, two of our foremost markets for rubber footwear, fell off sharply, the Japanese decline being due chiefly to economic depression in Japan, while the Norwegian shoe manufacturers are constantly giving more serious competition in Norway. Total exports for calendar years 1922, 1923, and 1924, as officially reported, are as follows:

EXPORTS OF FOOTWEAR

Items	1922		1923		1924	
	Quantity	Value	Quantity	Value	Quantity	Value
Rubber boots, *pairs*	241,919	$630,549	395,023	$947,536	680,346	$1,591,772
Rubber shoes, *pairs*	863,559	751,486	1,083,625	903,379	1,681,042	1,374,548
Canvas rubber-soled shoes, *pairs*	2,977,627	2,358,463	3,791,018	2,920,412	3,917,510	2,962,069
Rubber heels and soles, *pounds*	1,734,396	699,135	1,903,502	678,798	2,511,285	823,022

There was practically no price variation in the 1924 exports of footwear as compared with 1923, except for rubber heels and soles, the average value per pound of which decreased from $0.357 in 1923 to $0.327 in 1924. Rubber boots averaged $2.40 per pair in 1923 and $2.34 in 1924, rubber shoes about $0.83 per pair each year, and canvas rubber-soled shoes about $0.76 per pair.

Mechanical Rubber Goods Trade Normal

The 1924 trade in mechanical rubber goods was approximately the same in total quantity and value as in 1923. Exports of rubber belting increased slightly, rubber hose exports declined a little, and rubber packing shipments advanced markedly. The only price

[1] Assistant chief, Rubber Division, Department of Commerce. Published in *Commerce Reports*.

variation of consequence was for rubber packing, which dropped from slightly less than $0.47 per pound for 1923 to a trifle above $0.44 per pound for 1924. The exports in the past three years are shown in the following table:

EXPORTS OF MECHANICAL RUBBER GOODS

Items	1922		1923		1924	
	Pounds	Value	Pounds	Value	Pounds	Value
Rubber belting	2,590,057	$1,269,999	3,548,468	$2,032,310	3,577,255	$2,089,056
Rubber hose...	3,381,210	1,340,244	4,455,502	1,734,751	4,422,819	1,728,776
Rubber packing	1,149,446	546,115	1,564,492	731,306	1,885,360	838,389

Trade in Sundries and Specialties Heavy

The export trade in rubber specialties and sundries, and in hard rubber goods was generally much heavier in 1924 than in previous years. Several classes of rubber specialties were officially reported for the first time in 1924, and comparison with previous years for those classes is impracticable. Rubber thread exports were much heavier in 1924 than in 1923, partly owing to recovery in the European elastic webbing trade, and partly to German purchases from America. The value per pound of rubber thread exports increased from $1.02 in 1923 to $1.11 in 1924. The 1924 exports of miscellaneous rubber goods were as follows:

EXPORTS OF RUBBER SUNDRIES AND SPECIALTIES IN 1924

Items	Quantity	Value
Water bottles and fountain syringes.....*number*	260,449	$197,109
Other druggists' rubber sundries.....*pounds*	688,548	828,488
Bathing caps .....*dozen*	144,164	272,006
Rubber toys, balls, and balloons.....*pounds*	933,434	980,578
Rubber thread .....*pounds*	1,240,462	1,378,907
Hard rubber goods.....*pounds*	1,000,264	819,435
Other rubber manufactures, n. e. s.....*pounds*	4,365,461	2,551,965

Growing Exports of Scrap and Reclaims

The export trade in scrap rubber, as might be expected in view of the trend in the crude rubber market, has steadily increased since 1922, 3,400 tons more of scrap and old rubber being exported in 1924 than in 1923. The leading markets in order of importance were Germany, Spain, Canada, the United Kingdom, France, and Japan. Exports of reclaimed rubber also increased in 1924, Canada taking about 87 per cent of the total shipments. Prospects appear good for further growth in this trade in 1925.

EXPORTS OF RECLAIMED AND SCRAP RUBBER

Items	1922		1923		1924	
	Pounds	Value	Pounds	Value	Pounds	Value
Reclaimed rubber	2,274,424	$216,257	4,508,490	$469,193	5,458,157	$523,598
Scrap and old rubber	8,383,752	340,541	13,805,833	619,697	21,451,849	838,891

Factors Influencing Export Tire Prices

The volume production of American companies aids materially in meeting foreign price competition. Several American firms produce in the neighborhood of 20,000 tires daily, and Michelin scarcely exceeds this figure in both his French and Italian plants. The estimated total production of automobile casings in France in 1923 is 3,500,000, an average of 12,000 tires per day. While volume production aids American firms, the advantage of Michelin lies in the depreciated currencies of France and Italy. The Michelin company is dependent on export trade for over 50 per cent of its business at present, considering both the French and Italian plants. The company is organized for export trade to a much higher degree than any one of its competitors.

Optimistic Outlook for American Trade

The constantly growing importance of the export tire trade makes the field more attractive to American companies. With increasing usage of automobiles throughout the world, foreign trade in tires is steadily increasing. It is well worth while to maintain foreign branches and agencies, because the process of getting back into the trade when more propitious times come would be slow and difficult.

Optimism points to an improved state of the export tire trade for American companies, but conservatism requires recognition of the fact that gains by American companies in the international tire trade will be made slowly, as the result of protracted efforts over an extended period, coupled with willingness to engage with Michelin on equal terms so far as prices, trade discounts, and consignment terms are concerned.

American Tires Lead in the Americas

American makes of tires are in the lead in North America, including Mexico, although Michelin and Dunlop get a fair share of the trade in Mexico, and some Michelin balloon tires have been imported into the United States. The Philippines, Hawaii, and Porto Rico are purely American markets. Michelin has made inroads in our Cuban trade and Dunlop is also active there. Generally speaking, American and Canadian tires control the trade in the West Indies, Central America, northern South America, and the west coast as far as Chile. In Chile, Michelin, Dunlop, and American tires divide honors about equally. In Argentina, Uruguay, and Brazil, Michelin is perhaps the leading individual company, though American tires as a whole supply a larger share of the trade than those of any other country.

Competition Severe in Oceania and Asia

In Australia, where a local industry offers severe competition under the protection of a high customs duty, American tires are still doing a good business, and in New Zealand they are the leading makes. In Japan and China, America is offering increasing competition to Japanese made tires. In the Dutch East Indies, Michelin and Japanese Dunlop are the leading makes; in British India, Ceylon, and the Straits Settlements, Michelin and British Dunlop lead; in French Indo-China, Michelin holds undisputed sway.

French and British Tires Control African Markets

American makes, including shipments from Canada, hold a strong position in British South Africa and in East Africa, though Dunlop and Michelin are the leading individual makes in South Africa. On the west coast of Africa, American tires get a very small proportion of the business, especially in French territories where Michelin has a practical monopoly. In Algeria and Tunis, Michelin tires supply the bulk of the trade; Bergougnan, Dunlop, and Goodrich shipping to these markets from French factories get a fraction of the business. In Egypt Michelin leads with Dunlop second.

Michelin Supreme in Continental Europe

Throughout continental Europe American tires probably get less than 10 per cent of the business. Michelin tires dominate France, Spain, Italy, Portugal, Switzerland, Belgium, and the Netherlands, though there is competition with Pirelli, Dunlop, Continental, and American makes in Italy and Switzerland and with Englebert, Dunlop, and American makes in Belgium as well as in Holland, where German Continental tires are also fairly strong. In Austria and Hungary, locally made tires divide the trade with Michelin, Continental, and French Goodrich. Michelin leading, and Continental second, divide the trade in Poland and Czechoslovakia, while in Rumania, Yugoslavia, and Bulgaria, Michelin leads by a wide margin, with Pirelli, Dunlop, and occasionally other makes competing. In Turkey and Syria Michelin is the chief source of supply; in Palestine Dunlop heads the list of competitors, with Michelin second. Greece secures a fair percentage of tire imports from America, though Michelin controls the trade.

The Scandinavian countries have always been good markets for American tires, but both Michelin and Dunlop have gained, particularly in Norway and Sweden in the last two years. In Finland, Latvia, Lithuania, and Esthonia, Continental has perhaps been the leading individual make, but tires of all nations are represented.

British Market Turning to Dunlop Tires

Great Britain has been the leading tire market of the world since the close of the war. Michelin became the leading make in the British Isles in 1921 and held this position until the summer of 1923, when the Dunlop advertising campaign got fully under way and Dunlop products of improved quality were available in quantity. Since then Michelin and all other competitors have lost ground gradually in the British market, and Dunlop has steadily advanced. The number of automobile casings imported in 1922 was 1,164,326; in 1923, 1,270,543; and in nine months of 1924, only 680,955. Of the tire imports in 1924, France and Italy supplied 334,659, and the United States and Canada 298,121.

British-made tires are slowly but surely gaining prestige in the home market as well as in foreign tire fields.

Multiplicity of Tire Sizes for Export

In order to compete in foreign markets it is necessary for the manufacturer to produce cord tires in all standard inch and metric sizes. This multiplicity of sizes has naturally been a retarding factor in the business of small manufacturers. The advent of the balloon tire still further complicates matters. It would seem that the balloon tire is essentially a straightside proposition, but on the small cars which are growing in popularity in England and France, the metric clincher balloons seem to be satisfactory. For larger vehicles, straightside balloon tires will doubtless be the favorites, but whether the American type of straightside rim or the Dunlop well-base rim will prevail may be considered a doubtful question, the answer to which the future alone will decide, and the outcome of this question will have some bearing on tire construction. The growing use of small cars on metric clincher tires in several European markets favors the use of European made tires, and may become a factor of greater importance as time passes.

PROPER CARE OF RUBBER GOODS

Rubber goods that are properly compounded and vulcanized will not perish during storage for a reasonable length of time, but for their preservation certain precautions are necessary.

Rubber articles must not be stored too long. Most of them can be held more than a year without serious loss, but the keeping of such goods in stock for several years should be avoided. They should also not be stored in a hot place. At ordinary temperatures all rubber goods deteriorate slowly, but at high temperatures such deterioration is accelerated.

Strong sunlight is also injurious to rubber articles. Some goods will apparently endure it, but the direct rays of the sun will, in a surprisingly short time, ruin others, particularly those of thin texture. Grease and oil are also harmful to rubber goods, as they tend to soften and spoil them. In general, it is well to store rubber goods in closed containers in a cool, dark room and not to keep them too long. Remember that heat, light, and grease or oil all tend to spoil rubber and the longer the article is exposed to them the worse it is for the rubber.—*U. S. Rubber News,*

AUSTRALIA'S IMPORTS OF AMERICAN TIRES

It is interesting to note the steady increase during 1924 in Australia's importations of American-made solid and pneumatic tires, the figures for the latter rising from $23,303 in January to $150,089 in December. The total value of Australia's pneumatic tire imports from the United States for the year 1924 reached $969,325, as compared with $667,881 for the year 1922. Corresponding importations of solid tires were valued at $243,382, as against the 1922 total of $125,242.

Gos-mer-ett Finish for Rubberized Textiles

The attractive soft lustrous silky appearance imparted to the surface of rubberized goods known as electric finish was introduced many years ago. While attractive and successful this finish had certain inherent defects, one of which was the property of chalking when the goods were creased. This was due to starch used in obtaining the finish, which was thus not permanent. These drawbacks require that goods so finished must be tailored with the rubberized surface inside the garment to protect the finish from injury by rain.

Popular Types of Gos-mer-ett Garments

After forty years or more the perishable electric finish has been succeeded by an equally attractive but permanent one known as the Gos-mer-ett finish. This process was developed by the research department of the Meade Rubber Sales Co., Stoughton, Massachusetts, and patented January 1, 1924. The outstanding characteristic of the Gos-mer-ett coating is the fact that it combines the attractive appearance of the electric finish with the features of permanence and resistance to chalking. These unique properties are due entirely to the novel manner in which the Gos-mer-ett coating is vulcanized.

There are two methods of vulcanizing a rubberized coating, when sulphur chloride is used as the vulcanizing agent. The first method is known as the vapor cure and consists in suspending the coating in an atmosphere of vaporized sulphur chloride. The second method is known as the liquor cure and it consists in allowing the rubberized coating to pass over a wooden roll the lower half of which is immersed in a solution of sulphur chloride diluted with a suitable solvent. It is only the vapor cure which can be used in a coating having the electric finish, for the reason that if the liquor cure is used the starch, which has previously been brushed into the rubberized coating in order to give it the finish, is rubbed off as the coating passes over the wooden roll.

In the manufacture of Gos-mer-ett the coating is first given a partial cure in vapor. The length of this cure is only about one-half that of the normal vapor cure, but is sufficient to set the starch so that when the cure is completed with liquor no smudging or rubbing off of the starch results. In this manner the starch becomes so firmly imbedded in the rubber coating that it has become a part of it and will neither chalk on creasing the fabric nor be affected by rain.

While it has long been the practice to vulcanize, or cure, a rubberized coating either in vapor or in liquor, the principle of the set cure in vapor and a completion of the cure in liquor is new.

Gos-mer-ett finish is produced in four silvered color effects, gray, rose, blue and green, the permanence of which makes practical rain garments tailored with these silky rubberized surfaces on the outside.

Synchronous Motor Drive for Rubber Mills

With Special Reference to Dynamic Braking Control for Safety Stopping

By C. W. Drake[1]

DURING 1920 the Rubber Sub-Committee of the Industrial and Domestic Power Committee of the A. I. E. E. collected and prepared considerable data relative to the choice and selection of motors for mill-line drives (paper presented January 14, 1921, at the Akron-Cleveland meeting). It was mentioned in this report that synchronous motors had certain desirable characteristics for mill-line drives and that there were a few in operation which had given very satisfactory service. The real demand for synchronous motors, however, has come only since the interest in power factor improvement has been given thoughtful consideration.

Mill-line drives may be divided into two groups, namely, the geared type, in which gear units with high or moderate speed motors are used, and the gearless type, in which the motors operate at the speed of the mill line, or about 100 revolutions per

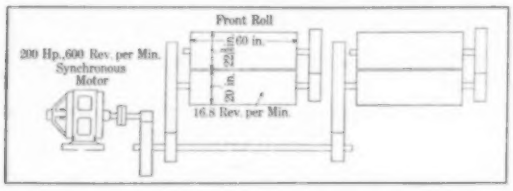


Figure 1. Schematic Arrangement of Two 60-in. Mills with Coupled Type Synchronous Motor

minute. For the latter group, synchronous motors have been used principally on account of their lower cost and better performance as compared with induction motors, while those synchronous motors which have been used for gear drive were undoubtedly installed primarily for power factor purposes, since there is little advantage in efficiency or difference in cost as compared with the induction motor.

Rubber mill drives impose two severe conditions upon the motor equipment, first, a high starting torque when the mills are started with rubber in the rolls, and second, a quick stopping in case of accident or emergency. The risk and danger involved in the milling of rubber has been appreciated ever since the industry started, and these factors have always had an important bearing on the type of driving equipment used. In other words, the question of safety to employes has had, as it rightly should have had, preference over other factors in the layout of mill drives. A knowledge of these conditions explains why the wound-rotor induction motor, which has been most extensively used for mill drives, has in most cases been equipped with a clutch brake. From the standpoint of starting and running the clutch is unnecessary, as such motors have ample starting torque. However, since most of the stored energy of the system is in the rotor of the motor, it is not surprising to find that one of the first methods of obtaining quicker stopping was to disconnect the motor and then apply a brake on the remaining load. Although clutch brakes have been quite generally used, it has been found in many cases that it is the practice in starting to close the clutch first and then start the motor, thus using the clutch only as a safety feature and saving the clutch lining wear which would be occasioned during starting.

In view of the established or common practice employed in the installation of wound-rotor motors, it was to be expected that synchronous motors which had lower starting torque and, as a rule, more stored energy, would be equipped with similar clutch brakes, and that these would be used both during starting and stopping. Thus equipped, the synchronous motor should give service identical with that of the induction motor, since each may be designed for the same maximum torque, although the fact that the induction motor slows down considerably before reaching its maximum torque may sometimes give sufficient warning to prevent its pulling out and stalling. Many of the early installations of synchronous motors were of the gearless type, and since motors as slow as this have a low starting torque, the clutches were undoubtedly needed to obtain a starting torque comparable with that developed by the wound-rotor motors. Synchronous motors used with gear units have much higher starting torque, but the question is just how much torque is required to start a mill line.

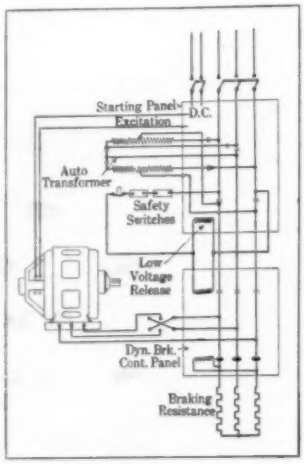


Figure 2. Schematic Diagram of Synchronous Motor Control Showing Starting Panel, Dynamic Braking Panel and Reversing Switch

Under normal conditions the mills are started empty, since the rubber is always removed before shutting down at the end of each shift. The torque required to start an empty mill line is so low that it may be entirely neglected.

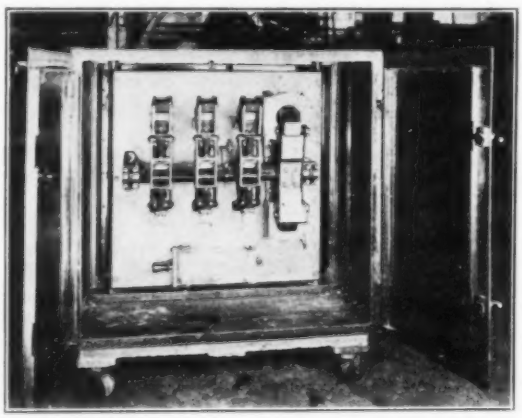
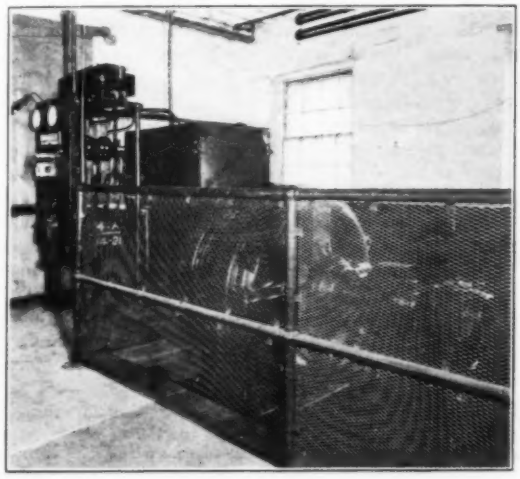


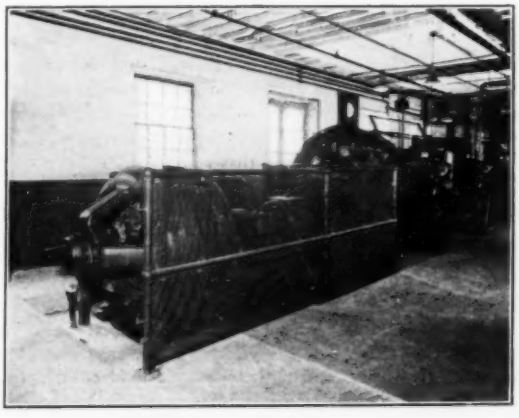
Figure 3. Gravity Operated Dynamic Braking Contactor with Reversing Knife Switch

If the mill line is shut down by accidentally pulling the safety switch or by loss of voltage, the torque required to start the mills will depend upon the condition of the rubber in the mills at that time, and that may take from 50 per cent to 150 per cent of full load torque. If the motor is shut down due to pulling out

[1] Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa. Presented at the Spring Convention of the A. I. E. E., St. Louis, April 13-17, 1925.

or the opening of the overload relay, which is usually set at about 200 per cent load, it is evident that if the motor cannot carry the load at synchronous speed, it cannot start it from rest, and one must resort to other means in order to reduce the load. The most usual method is to reverse the motor, thus backing up the rubber in the mills. Depending on conditions, the rubber may either be removed if very stiff and cold, or, after again starting the motor in the normal direction, the rubber may be forced through the rolls, since by this method the motor gets a start before the rubber enters the wedge of the rolls. Experience has proven that with a motor of correct capacity for a given mill line the shut-downs with loaded mills are not numerous, and consequently the question of starting torque should not unduly





Figures 4 and 5. Installation of a 200 h.p. Synchronous Motor with Dynamic Braking Control Driving Two 60-in. Mills

affect the rating or design of the motor. Synchronous motors designed to operate at 80 per cent power factor and at a speed of about 600 revolutions per minute, which is commonly used for geared drive, have a starting torque on full voltage varying from about 1.5 times full load torque for motors of 100 h. p. up to about 2.5 times full load torque for motors of 400 or 500 h. p. capacity. When started on the 80 per cent voltage tap of the starting transformer a torque varying from 1.0 to 1.5 times full load torque will actually be obtained, and although this is not as high as could be obtained by a wound-rotor motor or by a clutch, it has been found sufficient to meet all requirements.

As long as a clutch was thought necessary to obtain sufficient starting torque, the simplest, and probably the cheapest, method of obtaining safety stopping was by means of a brake on the mill side of the clutch. The elimination of the clutch gave opportunity for other methods of braking, and electrical engineers naturally considered first the possibilities of electrical systems. Tests conducted a number of years ago on synchronous motors proved conclusively that very quick and uniform stopping could be accomplished by disconnecting the motor armature from the a-c supply, and connecting it to a resistance of suitable value, while the field circuit of the motor is left energized at its normal full load value. Although the above facts and principles were known many years ago, it is only during the last two or three years that practical application has been made of them in the rubber industry, and to the best of the author's knowledge, no other industry has attempted a similar application.

Figure 1 shows a characteristic layout of two 60-inch mills, which, in this case, are driven by a 200-h. p., 80 per cent power factor, synchronous motor, three-phase, 440-volt, 60-cycle, 600 revolutions per minute. This motor is connected to the gear unit by means of a flexible coupling and when delivering 200 b. h. p. will have a leading reactive component of 124 kv-a., while a wound-rotor induction motor of similar rating would have a lagging reactive component of 106 kv-a. Consequently the replacement of an induction motor by a synchronous motor in this case effects a reduction of 124 plus 106 or 230 reactive kv-a. in the total plant load.

The details of a control equipment for a synchronous motor with dynamic braking will vary considerably with the size and voltage of the motor, also with the desires of the rubber company, but the fundamentals are the same in all cases. For instance, one company may desire the simplest type of manual starter, while another desires a full automatic starter in order to install it in some remote location. Consequently the dynamic braking contactor has been designed as a separate unit which may be used with any type of starting equipment. Figure 2 is a schematic or simplified diagram of the control in which the motor starter may be either manual or automatic. The three-pole, double-throw, dynamic braking contactor is really the heart of the system, for the stopping of the mills in case of emergency is entirely dependent on this and is independent of the rest of the control. As seen from the diagram, also from the illustration of this contactor in Figure 3, the upper contacts open the circuit to the motor in series with those of the main controller, thus introducing a double break and insuring opening the circuit even though the main circuit breaker or contactor does not open. The safety switches, of which there is at least one for each mill, are connected in series and upon the opening of any of these the circuit is opened to the low-voltage release coil of the starter and to the upper magnet coil of the dynamic braking contactor. Upon the opening of this circuit the upper contacts open and the lower contacts are instantly closed by the action of gravity aided by the spring pressure of the upper contacts. The closing of these lower contacts connects the motor armature to the dynamic braking resistance, and since the field circuit has not been opened, the voltage generated produces a current the value of which may be regulated by the value of resistance used. The voltage generated during braking is also utilized to energize the lower magnet and hold the lower contacts firmly together until the motor stops. The two-pole double-throw knife switch located below the three-pole contactor is used to reverse the direction of rotation of the motor when necessary and this switch is intended to be opened only when the motor is shut down. To provide against opening power current on this switch auxiliary contacts are furnished which open the main

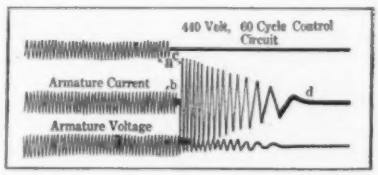


Figure 6.

circuit breaker or contactor of the starting equipment, also the dynamic braking contactor before the knife blades leave the jaws. Figures 4 and 5 show installation views of a 200 h. p. synchronous motor mill-line drive as shown diagrammatically in Figure 1, together with the starting equipment. The starter is of the manual type panel-mounted, consisting of a double-throw oil-immersed starting switch with separate mounting auto-transformers, the dynamic braking contactor, reversing knife switch and braking resistance are mounted in the cabinet at the rear of the starting panel.

To obtain the maximum possible safety on a rubber mill drive, the dynamic braking control should:

1. Operate by gravity and not depend upon closing a contactor electrically.

2. Operate at high speed, in order to obtain as short a stop as possible. The special contactors developed for this work operate upon failure of the control circuit by any cause and, due to the method of construction used, a very high speed is obtained. Tests upon a 500-ampere contactor show a total time from the opening of the control circuit of the upper magnet coil to the closing of the lower contacts of about 1/20 of a second. High speed at this point is of greatest importance, for until the lower contacts are made, the rubber mills are traveling at full speed. The average speed of the front roll in the present case was about 100 feet per minute or 20 inches per second, so that the roll travel from the opening of the safety switch to the close of the dynamic braking circuit of the motor would be about one inch.

A committee of the National Safety Council has been gathering data regarding the stopping distances of mill lines with a view of eventually preparing a safety code for rubber mills. No conclusions have as yet been reached but the Department of Labor of the State of New Jersey, in a tentative code, has decided upon 18 inches as a maximum travel for group-driven mills with roll diameters from 16 to 24 inches. The travel is to be measured with the mills empty on the surface of the front roll by means of an electrical device which operates when the safety switch circuit is broken. This method of measuring the travel, although it gives the results desired by the safety engineers and the rubber engineers, does not allow the electrical engineer to analyze the entire operation. Consequently, oscillograph records have been taken using three elements, and a characteristic film is reproduced in Figure 6. The upper element indicates the current through the safety switch, the center element the current in the motor armature, and the lower one the voltage at the motor terminals. At point *a* the safety switch opened, while the motor current was not interrupted until point *b* was reached. The small gap between *b* and *c* represents the time required by the contactor passing from the upper to the lower position. The distance from *c* to *d* indicates the time for the motor to stop after the braking current is completed, and by counting the number of cycles it is possible to determine just how many revolutions the motor made. For instance, in this case there are 16 cycles, and since the motor has 12 poles or 6 cycles per revolution, the total number of revolutions is 16/6 or 2⅔ revolutions. On the mill line under consideration the ratio between the motor speed and the roll travel is approximately 600 revolutions per minute to 100 feet per minute, or 10 revolutions equal 20 inches travel. Consequently 2⅔ revolutions represent about 5⅓ inch travel, to which it is necessary to add about one inch for travel during the operation of the controller, making a total travel of approximately 6⅓ inches. The time required for the motor to stop can be adjusted to the maximum torque obtainable by adjusting the braking resistance. Probably the limiting condition in all cases will be the gears and mechanical parts of the mill drive, since the stresses in the motor when stopping in the minimum distance are not greater than those obtained when the motor is pulled out of step, due to overload. As a roll travel of about 10 inches with mills empty is considered amply safe by motor engineers on mills of large diameter, there is little need of subjecting the equipment to unnecessary strain, and especially since every safety device should be operated and checked at least once a day to see that it is in satisfactory operating condition.

When stopping in a given distance, the dynamic braking will always be easier on the equipment than mechanical braking, since the torque developed in the motor is transmitted to the revolving field through the flexible medium of a magnetic field as compared with brake lining and mechanical friction in the latter case. Tests have also shown that the current values in the primary winding, when braking, are materially less than when starting under average conditions, so that, as far as the motor is concerned, if it is of sufficient capacity to start and operate the mill line satisfactorily, those functions will be more severe than those encountered in stopping by dynamic braking.

American Automobile Industry and Tire Production—1924

RATED according to wholesale value of production, the automobile industry now ranks first among all United States manufactures, according to statistics appearing in *Facts and Figures of the Automobile Industry*—1925 *Edition*. The production of motor vehicles during 1924 is estimated as totaling 3,617,602, or 3,243,285 cars, and 374,317 trucks. The wholesale value of these vehicles and parts amounted to $3,168,588,146, the total for the cars being $2,011,038,288, and the trucks $317,027,716. Parts sold by motor vehicle manufacturers accounted for $240,308,142, the figure for replacement parts and tires being $600,214,000. The amount of capital invested during 1924 in the motor vehicle manufacturing business is said to be $1,691,050,112.

Registration during the past year included a total of 17,591,981 motor vehicles, or 15,460,649 cars and 2,131,332 trucks, a gain of 17 per cent over the year preceding, notwithstanding a decline in production during 1924 of 11 per cent, as compared with 1923. According to compilations prepared by the United States Department of Commerce, there are now 21,264,752 motor vehicles in the world, 83 per cent of these cars and trucks being in the United States, while of the world's cars produced in 1924 the United States supplied 90 per cent. In furnishing the remainder France, Canada, the United Kingdom, Italy, Germany, Austria, Belgium, Czechoslovakia, and Spain followed, in the order given.

The amount of rubber used by the American industry in the construction during 1924 of the vehicles above mentioned totaled 279,620 tons, or 80 per cent of the country's total consumption of crude rubber during that year. Figures prepared by the Rubber Association of America and indicating the development of the rubber tire production in the United States are as follows:

Rubber Tire Production

	1921	1922	1923	1924
Tire casings .....*number*	27,297,919	40,930,852	45,245,000	51,633,000
Inner tubes .....*number*	32,082,000	50,847,912	60,171,000	70,705,000
Solid tires .....*number*	586,115	874,000	769,000	910,000
Crude rubber consumed..*lbs.*	308,125,440	523,526,220	545,135,360	625,348,000

IN STUDYING THE GROWTH DURING THE PAST TEN YEARS OF THE principal chemical engineering industries of the United States, *Chemical and Metallurgical Engineering* has prepared a special compilation, the figures concerning the rubber industry being as follows: value of rubber products in 1914, $224,000,000; in 1921, $705,000,000; and in 1923, $954,000,000.

The Scrap Rubber Industry[1]

Divisions of Waste Materials Trade—Scrap Rubber Collection System—Warehousing, Sorting and Packing—Official Classification of Grades—Special Ground Scrap—Geographical Distribution of Supply

Waste Materials Trade

THE principal items of scrap materials handled in the waste trade are bagging, bones, metals, paper, rags, rope and rubber gathered from world-wide sources for their economic value. The collection, sorting and merchandising of scrap constitutes a business of large volume employing an unnumbered army of collectors, sorters, etc. The output of the reclaimed rubber manufactured from scrap rubber as its basis is estimated at 100,000 tons annually. This production requires a supply of scrap of about 175,000 tons. Scrap rubber comes back to the rubber industry from discarded wornout articles of all sorts, chiefly tires, tubes, boots and shoes.

Collection System

The collection of waste materials of all sorts, including scrap rubber, begins by the activities of innumerable individual gatherers or peddlers of junk whose miscellaneous stocks are roughly separated into kinds and sold daily to a small dealer in general junk, who stands first in a series of three or four such handlers of waste materials ranking upward in size and importance of dealings. The activities of each junk dealer in turn are matters of sorting, baling, storage and selling to the dealer of next greater capital and facilities. Thus, each sale of general scrap increases in value by closer separation of sorts and grades as the increasing tonnage passes on to the third junk man, by whom the principal grades of scrap rubber are differentiated. These grades are tires, shoes, inner tubes, truck tires, hose, mechanicals, and hard rubber, named in the order of their relative tonnages. At this stage the grades pass on to the larger scrap dealers and specialists. In the hands of each of these factors the scrap continues to be further sorted into additional grades for reclaiming or ground for direct remanufacture, without reclaiming.

Warehouse Sorting

An example of large scale sorting and classifying scrap inner tubes to specification is shown in the accompanying illustrations. The tubes first go to the "metal pullers," who remove the air valves. Then, as seen in Figure 1, they are examined as to color, quality and weight and sorted into a half dozen qualities. Inner tube patches are then cut out by hand shears and the tubes are ready for baling. The illustration, Figure 2, shows a section of a pile of several hundred tons of tubes ready for baling. In this work the most improved baling machinery is utilized, operated by both electric and hydraulic powers. The baling cavity is always at the floor level while being filled with stock. When filled, the doors are closed on either side and the bale is compressed hydraulically and fastened with flat ties over the surrounding burlap.

Fig. 1. Grading Scrap Inner Tubes

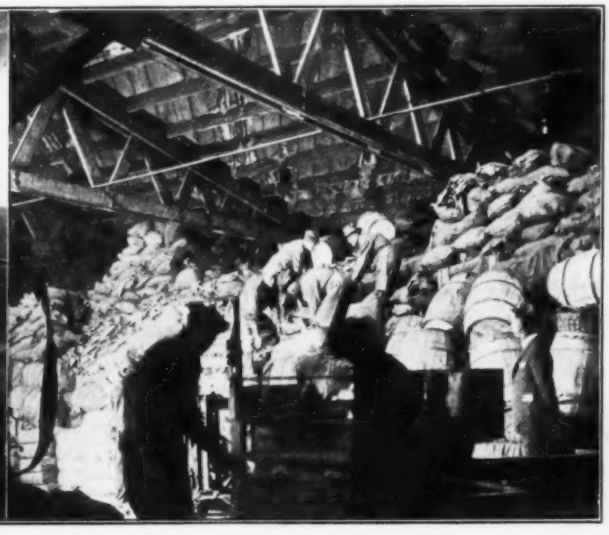


Fig. 2. Baling Scrap Inner Tubes

Classified Grades

With successive sortings of scrap rubber special grades appear from the general types until over two dozen specific grades are finally available for the use of the reclaimers. Official standard classifications for scrap rubber have been issued by scrap dealers and reclaimers' associations.[2]

These grades are as follows:

1. Rubber boots and shoes must consist of black rubber boots and shoes only. They must be dry and clean, free from dirt,

[1] Data and illustrations supplied by H. Muehlstein & Co., 41 East Forty-Second Street, New York, N. Y.

[2] National Association of Waste Material Dealers, Scrap Rubber Division. Circular F.

The Rubber Association of America, Rubber Reclaimers Division. Standards of Scrap Rubber Specifications and Packing.

leather, and all metal excepting that applied by the manufacturer. Colored rubber boots and shoes consist of red, white and tan, and fancy colors, and must be packed and sold separately, the grading and packing to conform to Article 1.

2. Trimmed arctics must be closely trimmed and free from leather and any composite non-rubber bearing material, such as fiber inner soles, etc. Untrimmed arctics must be free from leather and any composite non-rubber bearing material, such as fiber inner soles, etc.

3. Trimmed tennis shoes must be black, closely trimmed, and free from molded soles and leather or any composite non-rubber bearing material such as fiber inner soles, etc. Untrimmed tennis shoes must be black and free from leather and molded soles or any composite non-rubber bearing material, such as fiber inner soles, etc.

4. Mixed standard auto tires must be free from unguaranteed tires, heavy beaded tires, non-pneumatic or filled tires; must not contain any hard, oxidized, burnt, single tube, motorcycle, stripped or badly worn tires, nor tires containing leather or metal.

5. Unguaranteed auto tires must be free from non-pneumatic or filled tires, heavy beaded tires, hard or oxidized, stripped, badly worn tires or tires with leather or metal.

6. Badly worn auto tires must be free from hard or oxidized non-pneumatic or filled tires, heavy beaded tires and tires with leather or metal. A reasonable proportion of the tread must be on the tires.

7. Stripped auto tires must be free from hard or oxidized non-pneumatic or filled tires, heavy beaded tires and tires with leather or metal.

8. No. 1 auto tire peelings must be free from cloth, metal and leather.

9. No. 2 auto tire peelings must consist of peelings from auto tire treads only, and must be free from leather, metal stripped auto tire fabric; also free from beadless auto tires and free from dykes and side walls.

10. Bicycle tires must be free from hard or oxidized tires and tires with wire and beads.

11. Solid wagon and cab tires must be free from metal, baby carriage and cushion tires.

12. Solid motor truck tires with cloth must be 2½ inches or over in diameter. Must be free from metal and tires with hard or fiber bases.

13. Clean solid motor truck tires must consist of tires over 2½ inches in diameter. Must be free of all metal, hard bases, fiber and cloth bases.

14. Airbrake hose must be free from metal, hard or oxidized hose and steam hose.

15. Garden hose must be ½ inch or over in diameter and free from metal, rags, rope and cotton covered hose.

16. Large hose must be one inch or over in diameter, must be free from metal, rags, rope, hard or oxidized hose and all cotton covered hose.

17. Cotton covered fire hose must be rubber lined and free from hard or oxidized hose and metal.

18. No. 1 auto inner tubes must be strictly pure gum, live floating tubes, free from crusty tubes, cloth, metal, red and cloth patches, and free of black floating tubes.

19. No. 2 auto inner tubes, known as compound tubes, must be standard tubes, free from crusty tubes, cloth, metal and cloth patches.

20. Red auto inner tubes must be standard tubes, free from punchings, crusty tubes, cloth, metal and cloth patches.

21. No. 1 white rubber must consist of strictly clean white soft druggists' sundries and must be free from cloth and metal.

22. No. 2 white rubber must consist of white mechanical rubber and be free from cloth, metal, crusty, hard or oxidized material, white soles and heels, jar rings and cement wringers.

23. Mixed black rubber must be free from cloth, metal, crusty, hard or oxidized material, packing, stripped matting, tiling, baby carriage tires, soles and heels.

24. Matting and packing must be free from Garlock, Crandall and piston packing, belting and similar material, metal and hard or oxidized stock.

25. No. 1 red rubber must consist of soft mechanical rubber. Must be free from maroon, chocolate, and other dark shades and from cloth and metal.

26. No. 2 red rubber must be free from non-pneumatic or filled tires, heavy fruit jar rings, packing, hard or oxidized rubber, cloth, metal, soles and heels, and maroon and chocolate colored materials.

27. Red packing must be free from hard or oxidized rubber, cloth and metal and discolored rubber and free from graphite packing.

Ground Scrap Rubber

Selected grades of standard ground scrap clean of fiber and metal are marketed by the large scrap merchants. These grades include pneumatic and solid tire tread stocks, mechanical black scrap, wringer rolls and hard rubber. They are utilized as additions to new mixings, chiefly for making molded articles. The machinery for preparing these ground stocks comprises ordinary corrugated rubber crackers and grinding rolls supplemented by sieves for sizing the product and the removal of non-magnetic metals, fiber and other foreign matter. A magnetic separator is used for removal of fine particles of steel or iron. The clean fine stock is finally dried and thoroughly cooled before packing for shipment. Cooling is a necessary precaution against spontaneous combustion because ground rubber is an exceedingly poor conductor and liable to ignite by concentration of heat in the mass. As a further precaution against fire in transit or storage all ground rubber stocks are shipped in metal containers instead of bags.

Sources of Scrap

The tonnage of scrap rubber collected annually is largely in excess of the requirements of the reclaiming industry, with the result that the grades are of scarcely sufficient value to pay for their handling. Excessive collection is most marked in the case of automobile tires because at the original sources, such as garages and vulcanizing shops, the collector is forced to take all scrap tires in order to secure the inner tubes. He takes them as a matter of accommodation, at a trifling figure. In disposing of his stocks each minor dealer imposes like obligations in the sale of his scrap, with the result that the final dealer is overburdened with a vast stock of tires for which the reclaiming industry affords an insufficient outlet. The value of this over-supply of scrap is so low that it is frequently exceeded by its cost of transportation. Therefore the areas of collection and utilization must coincide approximately. Three general areas are recognized in the scrap rubber trade. They are, (1) east of the Alleghenies, (2) west from these mountains to the Mississippi River, and (3) west from there to the Pacific Coast. Scrap rubber originating in the last section is practically valueless and most of it remains where dumped if not burned. Some scrap originating on the Pacific Coast is exported to Japanese and Chinese centers and a little is reclaimed in California. It can be brought to New York via the Panama Canal only when the New York price is about $25 a ton. Under these circumstances the large scrap rubber operators maintain warehouses at strategic points for collection and distribution.

U. S. EXPORTS OF BALLS, TOYS AND BALLOONS

There was a steady increase during 1924 in American exportations of rubber balls, toys, and balloons. The figures show an advance from $47,593 for the January shipment to $117,282 for October, while the total value for the entire year reached $880,578. England was easily the leading purchaser of these goods, while other less conspicuous markets included the Netherlands, Mexico, Canada, Cuba, British South Africa, Argentina, Australia, British India, and New Zealand.

SOLID TIRE IMPACT FORCE

Investigations carried forward by a well-known motor truck company show that when a truck equipped with solid rubber tires and traveling at 16 m.p.h. hits a road obstruction one inch high, the impact on the road surface is seven times the load on the tire. In other words, for an 8,500 pound load on each rear wheel, the intensity of the blow imparted to the road surface is nearly 60,000 pounds. The average impact is about four times the static load: with pneumatic tires it is about 25 per cent more than the static load.

What the Rubber Chemists Are Doing

Report of the Physical Testing Committee of the Division of Rubber Chemistry—I[1]

THE investigations which form the subject matter of this report have been confined to the methods of preparation and testing of experimental vulcanizates by the so-called tension tests. This committee has confined its efforts to the elucidation of factors which have either been in dispute or which have not been satisfactorily treated in published methods on physical testing. Its aim has been to make the investigations and recommendations as practical as possible, taking into due account the present apparatus and methods in general use in the rubber testing laboratories of the United States. In short, it has tried to point out sources of error and to make such recommendations as might be hoped to lead to a general improvement in routine and experimental mechanical testing.

TABLE I

Roll diameter	Cm.	15	15	20	15	20
	Inches	6	6	8	6	8
Roll length	Cm.	30	30	30	30	40
	Inches	12	12	12	12	16
R. p. m.	Slow roll	18	..	10	23	20
	Fast roll	26	..	13	23	29
Surface speed in feet per minute	Slow roll	28	42	27	36	41
	Fast roll	41	50	35	36	54
Surface speed ratio		1.44	1.18	1.30	1.00	1.30

There is a vast fund of excellent experimental procedure available in De Vries' *Estate Rubber*, G. S. Whitby's *Plantation Rubber and the Testing of Rubber*, and Circular 38 of the U. S. Bureau of Standards, with which everyone interested in the problems of mechanical testing should be familiar. It was not intended to displace this material, but rather to supplement it in certain places where it lacks definiteness to the needs of American uses and procedures.

This committee also recognizes that certain types of rubber products are sold on specifications, the fulfillment of which demands that these goods shall pass certain minimum requirements when tested under a given set of conditions, these conditions having been established by the purchaser or its agents. It is not the purpose or function of this committee to specify in what manner these conditions of mechanical testing should be changed or modified. It rests with this committee only to recommend a procedure which will best suit the needs of the members of this society in their routine and research methods for the physical testing of experimental compounds.

Following the decision of the Council of the American Chemical Society with regard to the use of the metric system in all of its activities and publications, the data are reported in metric units, together with the English equivalents in most cases.

Milling

A wide latitude exists as to size and speed of mill rolls, friction ratios, etc. As a matter of interest Table I gives specifications of experimental mills in use in several large rubber laboratories.

The main fact to be considered is that rubber can be broken down to the same degree on any kind of a mill by suitable adjustments of the time and temperature. In general, rubber should be plasticized on the mill under such conditions as will cause a minimum destruction of the nerve of the rubber. An attempt was made to throw some light on this point by milling rubber stocks to different degrees of softness as determined by Williams' method for plasticity[2], and then curing and testing the resulting stocks under comparable conditions. Thus in Table II are given the physical tests on slabs cured from stock milled to various plasticities (K).

The stock was a friction stock containing 93 per cent rubber by weight cured for 60 minutes at 143 degrees C. (290 degrees F.). The K values indicate the softness; the lower the K value the softer the stock.

Further data of the same type are given in Table III.

This stock contained 93 per cent rubber by weight, curing in 30 minutes at 125 degrees C. (258 degrees F.). The accelerator was mercaptobenzothiazole.

These data indicate quite conclusively that:

1. The stress-strain characteristics of the cured slab run parallel with the softness of the uncured stock.

2. Milling at low temperatures leads to excessive softness of the uncured stock, which manifests itself even after curing in the softness of the S-S curve and more noticeably in tensile.

3. The higher the temperature of the stock on the mill the less the time factor; that is, increase in length of milling time is less injurious at high milling temperatures.

4. The effect is purely physical, the rate of combination of sulphur being unaffected.

Experiments of the same sort were next extended to stock compounded with zinc oxide. In a stock containing 50 smoked sheets, 50 pale crêpe, 60 ZnO, 6.2 sulphur, and 0.5 Hexa by weight cured for 60 minutes at 143 degrees C. (290 degrees F.), the results given in Table IV were obtained.

TABLE II

Stock	Milling Conditions Temp. °C.	Time Min.	K	Kg./Sq. Cm. at: 500%	600%	700%	800%	Tensile Kg./sq. cm.	Elong. Per cent
*M*1	40	25	1.1	16	28	56	100	138	865
2	100	25	4.3	18	34	64	109	130	840
3	100	5	4.9	25	42	76	134	142	815

TABLE III

Stock	Milling Conditions Temp. °C.	Time Min.	K	Kg./Sq. Cm. at: 500%	600%	700%	800%	Tensile Kg./sq. cm.	Elong. Per cent	Combined S. Per cent
*A*1	100	13	4.7	18	35	65	116	144	845	1.07
2	100	25	3.7	18	32	59	106	144	860	1.13
3	100	55	3.0	15	27	52	96	146	880	1.16
4	40	30	2.0	12	20	38	70	105	870	1.13
5	40	60	1.6	10	15	23	40	72	915	1.07
6	40	120	1.3	6	8	13	25	44	890	1.05

TABLE IV

Stock	K according to Williams	Kg./Sq. Cm. at: 300%	400%	500%	600%	Tensile Kg./sq. cm.	Elong. Per cent
*M*15	1.1	40	65	106	177	262	690
16	3.0	34	57	93	152	260	735
17	4.2	30	51	86	142	242	735

These results are directly contrary to those obtained on very lightly compounded stock (Tables II and III). The experiments were therefore repeated by a different laboratory. The cure was 60 minutes at 141 degrees C. (287 degrees F.) in same four-cavity mold (Table V).

[1] Presented in part at the 67th meeting of the American Chemical Society, Washington, D. C., April 21 to 26, 1924.

Courtesy of *Industrial and Engineering Chemistry*, May, 1925, 535-40.

[2] *Industrial and Engineering Chemistry*; 16, 362 (1924).

These results indicate a softness of the cured stock and low tensile properties which parallel the softness of the uncured stock.

The S-S results for Stock *X2* are anomalous, although the tensile figures are regular.

TABLE V

	Milling Conditions			Kg./Sq. Cm. at:				
Stock	Temp. ° C.	Time Min.	*K*	400%	500%	600%	Tensile Kg./sq. cm.	Elong. Per cent
X1	100	23	5.2	45	83	140	240	730
2	80	30	3.5	51	91	153	240	710
3	40	55	2.2	45	83	140	200	685
4	40 (tight mill)	55	1.7	42	77	128	160	650

Still another series of tests was made using the following formula: 100 rubber, 60 ZnO, 4 sulphur, and 1.5 of triphenyl guanidine. The cure was 120 minutes at 141 degrees C. (287 degrees F.) in same four-cavity mold (Table VI).

TABLE VI

	Milling Conditions			Kg./Sq. Cm. at:				
Stock	Temp. ° C.	Time Min.	*K*	400%	500%	600%	Tensile Kg./sq. cm.	Elong. Per cent
X5	100	17	4.6	60	101	169	249	690
6	80	22	2.8	57	96	158	212	670
7	80	100	1.4	54	88	142	156	620
8	40 (tight mill)	100	0.9	57	96	...	113	530

The tensile figures drop off with increasing softness of the uncured stock, as do the intermediate points on the S-S curve, with the exception of *X8*, which is slightly stiffer than *X7*.

The general conclusions are, that increased softness of the uncured stock quite probably leads to lowered physical properties of the cured stock.

Further data show that the volatility of the accelerator may cause wide variations. The stock used contained 50 smoked sheet and 50 pale crêpe, 6 ZnO, 3 sulphur, and 0.9 Hexa. The cure was 60 minutes at 141 degrees C. (287 degrees F.) and all stocks were cured and tested under identical conditions (Table VII).

The percentage of combined sulphur is taken as the index of the extent of the vulcanization reaction, and it will be noted that this figure varies from 1.25 to 1.55 per cent, the lower figure being obtained at the higher temperatures of milling. It would appear, therefore, that the accelerator escapes at the high temperatures, and naturally more escapes the longer the milling time. The data in this table are at direct variance with the data in Table III, where the accelerator used is not volatile and gives practically constant values for combined sulphur. In that case the plasticity of the uncured stock exerts a marked effect on the properties of the cured stock. In the present case the same conditions which give high *K* values also lead to volatilization of the accelerator, and the loss of accelerator more than offsets any advantage to be gained by trying to degrade the rubber to a lesser degree by less drastic milling.

The precise conditions of time and temperature of milling which should be used in routine testing are thus rendered rather difficult

TABLE VII

	Milling Conditions			Kg./Sq. Cm. at:				
Stock	Time Min.	Temp. ° C.	*K* at 70° C.	500%	700%	Tensile Kg./sq. cm.	Elong. Per cent	Combined S. Per cent
1	25	40	1.82	27	93	146	780	1.44
2	25	55	2.08	26	89	166	805	1.43
3	25	70	2.50	25	86	159	810	1.40
4	25	90	2.77	23	79	148	810	1.28
5	10	90	3.32	25	87	168	815	1.36
6	20	90	3.17	24	78	153	815	1.25
7	5	90	3.72	26	92	175	820	1.45
8	25	25	1.63	25	89	148	790	1.54
9	40	25	1.55	26	89	146	790	1.55
10	10	55	2.67	27	97	172	800	1.48

of elucidation, but since the milling operations in the factory are generally carried out at rather elevated temperatures (generally in excess of 80 degrees C.), the following recommendations seem to be justified:

1. Mill at as high a temperature for as short a time as consistent with thorough mixing and good dispersion of pigment.

2. Endeavor to standardize both time and temperature of milling, with regard to the composition of the stock. In general, stocks high in rubber content should be milled at temperatures from 80 degrees to 100 degrees C., and the time need rarely exceed 20 minutes. Highly compounded stocks generally require somewhat lower temperatures but rarely lower than 60 degrees C.

3. Regulate the volume of the batch to the size of the mill and adjust the opening between the rolls to a definite standard.

ORDER OF MIXING. No new experimental work has been done on this item. The general experience of the committee sanctions the following order: rubber, reclaimed rubber, pitches and waxes, accelerator, liquid softeners, fillers, sulphur. In most cases the sulphur may be added with the fillers. Where reclaimed rubber is used it is best to break the crude rubber and reclaimed rubber separately and then blend them together.

DETAILS OF MIXING OPERATION. After the ingredients have been incorporated the stock should be thoroughly mixed by cutting and rolling, etc., and if lumps of compound are visible the stock may be refined by passing through tightly set rolls one to three times. Ordinarily, 3 to 5 minutes' mixing is ample. The mill rolls should then be set to gage and the stock allowed to run for 1 minute to "set the grain." The mills should be set at such gage that the stock when cold is from 10 to 25 per cent thicker than the cured slab.

PREPARATION FOR CURING. The uncured sheets should be aged overnight before curing. As a matter of fact, sheets aged for 30 minutes before curing gave tensile results only 5 per cent lower than stocks aged overnight. Two-hour age periods gave results identical with longer periods. However, the longer period is recommended as a precautionary measure. For general test purposes the uncured stock should be cut to fit the mold cavity, and the sheets are best placed in the mold in such position that the test pieces are died out in the direction of the "grain,"—that is, in the plane of the mill or calender.

Curing

The committee makes no recommendations for any particular manufacturer's product as regards presses or press equipment for temperature indication or control. Neither does it recommend curing in a press in preference to some other method of curing, for instance in an oil bath or in a steam vulcanizer. However, since most rubber laboratories use the hydraulic platen press, it has confined its work to this type of apparatus.

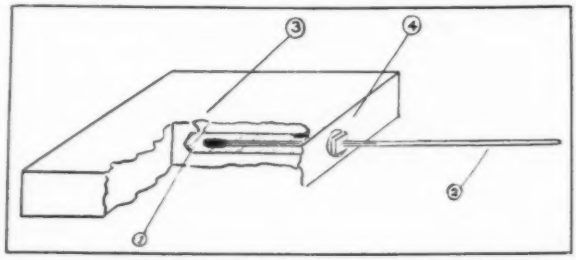
REQUIREMENTS FOR PROPER OPERATION OF PLATEN PRESSES. 1. It is imperative that no condensed water be allowed to collect on the surface of the platens in contact with the molds. If this condition does exist it is quite impossible to maintain the proper temperature. The surface of the platens will always be at a lower temperature than the steam, because the layer of condensed water greatly retards the conduction of heat from the steam to the face of the platen. Therefore, the thermometer in the steam may indicate the required temperature, but the actual temperature of the stock in the curing mold may be considerably lower. This condition may be remedied as follows: (*a*) By the use of presses of the bored platen type. (*b*) If the platens are of the chamber type, satisfactory conditions may be maintained by insuring good drainage by placing the steam outlet pipe so that it is slightly below the bottom of the steam chamber.

2. It is equally important that a good flow of live pure steam be kept in constant circulation through the platens. This can ordinarily be obtained by allowing a portion of the steam to bypass the steam trap.

3. Temperatures should be determined by a mercury thermometer, preferably one to each platen, mounted in the platen in such fashion that circulating steam is in contact with the bulb or well of the thermometer. It is also advisable to check the surface of the platens for uniformity of temperature by means of thermocouples, or by the means suggested in the next paragraph.

4. Owing to the large temperature coefficient of the vulcaniza-

tion reaction it becomes imperative for accurate curing to be able to determine the actual temperature of the mold with precision. For a very complete exposition of the effect of the temperature on curing see De Vries' *Estate Rubber*, p. 543. Briefly, if the temperature coefficient is 2.6 per 10 degrees C., a difference of 1 degree C. will make a difference of about 10 per cent in the curing effect, corresponding to about 6 minutes on a 60-minute cure.



(1)—MERCURY WELL, (2)—STANDARD THERMOMETER, (3)—OVERFLOW CAVITY, (4)—STUFFING BOX.

Fig. 1.—Press Standardizing Block

The apparatus shown in Figure 1 has been found exceedingly helpful in standardizing and controlling the curing press. It is simply a block of soft steel of the thickness of the curing mold, and having the length and breadth dimensions of the test sheet. A small vented well is drilled into the block in such fashion that a small accurate thermometer of the Anschutz type (reading to 0.1 degrees C.) may be inserted through a stuffing box. The well is then filled with mercury and the block can then be placed between the platens of the press and the temperature reading obtained at intervals until constant. By using a standard thermometer one can readily adjust the steam requirements of the press to give the required temperature and can also check the operation of the presses from time to time.

5. There are two systems of piping in use: one, the so-called series system, wherein the steam outlet pipe on the top platen connects to the steam inlet pipe on the next lower platen, etc.: the other, the so-called parallel system, admits steam to all platens through a common header, and the outlet pipes are connected to another header. Either arrangement is satisfactory.

The presses should be sheltered from direct drafts of air, as the radiation and convection factors can become quite appreciable. It seems almost unnecessary to add that the platens of the press should be flat and parallel so that good contact with the mold at all points is assured.

MOLDS. 1. Engraved steel molds with a rigid steel cover plate are recommended as giving more perfect cured slabs than frame type molds, that is, the thickness of the cured slab is more uniform. The thickness of each half of the mold should be not less than 1 cm. (0.4 inch) to secure sufficient rigidity. Uniformity of gage of cured slab is an important consideration in securing accurate test data.

2. The molds should be of such size with reference to the area of the platens of the press that the edges of the rubber slabs are at least 8 cm. (about 3 inches) from the edge of the platens. Radiation from the sides of the platen tends to lower the temperature of the press and the mold at the extreme edges.

3. The molds should be well heated before any cures are made. Ordinarily 20 minutes in the press with platens closed is sufficient to heat the molds thoroughly. With the molds well heated, cures may be made without allowing for the temperature lag of the mold except for very short cures. If delays occur between successive heats, the molds should be covered and the press plates closed in order to keep the molds up to temperature. Cured sheets should be removed from the molds immediately after the cure is finished, and in the case of ultra-accelerated stocks, curing in a few minutes, should be placed in cold water immediately on removal. Naturally the thickness of the mold cavity, that is, of the cured slab will determine to a large extent the actual value of the so-called "mold lag." The committee has determined the temperature rise, experimentally by thermocouples, of the center of slabs 1, 2, and 4 mm. thick (0.04, 0.08, and 0.16 inches) and from the temperature-time curves thus obtained has calculated the "equivalent cure." This equivalent cure is the time in minutes that would be necessary if the stock could be maintained at the press temperature during the entire curing period.

TABLE VIII

Thickness of Slab	In press		
Mm.	5 min.	10 min.	15 min.
0	5	10	15
1	4.5	9.5	14.5
2	3.3	8.2	13.2
4	1.5	5.3	10.4

Thus, even for thin sheets, 2 mm. (0.08 inch), there is a lag of approximately 2 minutes for cures under 15 minutes.

The conclusion of this paper will be published in our next issue.

Chemical Patents

The United States

VULCANIZATION ACCELERATORS. A composition of matter consisting of the reaction product of fuel oil, carbon bisulphide and alkali.—James L. Stevens, Hayden, Arizona. United States patent No. 1,525,211.

INSECT CATCHING GLUE. A solution of halogenically substituted caoutchouc in chlorinated cotton oil.—Carl Thieme, Zeitz, Germany.—United States patent No. 1,527,715.

MANUFACTURE OF SPONGE RUBBER. A process comprising mixing together rubber, a vulcanizing agent, a gas producing substance, a volatile rubber solvent, an accelerator and then vulcanizing the composition.—F. S. Malm, Chicago, Illinois, assignor to Western Electric Co., Inc., New York, N. Y., United States patent No. 1,533,197.

COMPOSITE RUBBER AND LEATHER MATERIAL AND METHOD OF MAKING. This comprises degreasing the leather, impregnating it with castor oil, joining to it by pressure a layer of vulcanizable material, embossing, curing by the aid of a cold cure accelerator, and superficially treating it with a solution of bromine.—A. G. McKinnon, Andover, assignor to Boston Rubber Shoe Co., Malden, both in Massachusetts. United States patent No. 1,534,456.

CHEWING GUM. The gum contains hydrogenated oil of a melting point not substantially below 52 degrees C., and rubber.—H. V. Dunham, Mount Vernon, New York. United States patent No. 1,534,929.

TREATMENT OF RUBBER FOR USE AS CHEWING GUM. The process comprises heating the rubber with a saponifiable oleagenous material to a temperature above 100 degrees C. and below 200 degrees C., for several hours, thereafter saponifying at least a substantial part of such oil, fat or wax and washing the product.—H. V. Dunham, Mount Vernon, New York. United States patent No. 1,534,930.

PROCESS OF MAKING CHEWING GUM BASE. The masticatory properties of rubber gums high in resins are preserved by heating with about 5 to 10 per cent of an oleagenous material, which is not deleterious to health, at a temperature of about 115 to 130 degrees C.—H. V. Dunham, Mount Vernon, New York. United States patent No. 1,534,931.

TIRE FILLING COMPOSITION. Gelatine, water, glycerine, dextrin, oxide of zinc, glucose and formaldehyde are proportioned to form a light porous and resilient tire filler.—W. L. Edelkrantz, San Francisco, California. United States patent No. 1,535,561.

ACCELERATORS FOR VULCANIZATION. Process which comprises vulcanizing rubber in the presence of a halogenated alkylamine.—W. L. Tanner, assignor to The Grasselli Chemical Co., both of Cleveland, Ohio, United States patent No. 1,535,963.

METHOD OF MANUFACTURE OF RUBBER COMPOUND. To smoked sheets, rosin oil, sulphur and lime at approximately 130 to 180 degrees F. are added ethylidene aniline previously brought to about 212 degrees F., then adding ammonium bicarbonate and cooling the mass to approximately 70 degrees F. This composition is mold cured at 80 pounds steam pressure for attachment to rubber sheets.—A. L. Freelander and W. G. Goodwin, assignors to The Rubber Development Co., all of Dayton, Ohio. United States patent No. 1,536,288.

RUBBER COMPOSITION. A composition for producing rubber products having a comparatively high degree of softness and flexibility comprising an admixture of pure rubber gum compound and Sandee gum.—Frederick J. Maywald, Nutley, New Jersey. United States patent No. 1,537,483.

METHOD OF VULCANIZING RUBBER. A compound such as rubber, a metallic oxide and sulphur, is subjected to the action of a current of air containing an organic accelerator in a closed chamber while under a vulcanizing heat.—T. W. Miller, Ashland, Ohio. United States patent No. 1,537,858.

METHOD OF VULCANIZING RUBBER. This consists in dusting or packing in a metallic oxide a rubber compound containing rubber, sulphur and an organic accelerator, and then subjecting it to a vulcanizing heat.—T. W. Miller, Ashland, Ohio. United States patent No. 1,537,859.

METHOD OF PRODUCING CARBON BLACK. The method comprises heating a hydrocarbon gas in the gaseous phase to decompose it, distributing the products of decomposition in a cool inert gas and collecting and separating the products.—W. K. Lewis, Newton, Massachusetts, assignor to The Goodyear Tire & Rubber Co., Akron, Ohio. United States patent No. 1,536,612.

METHOD OF MAKING PATCHES FOR RUBBER GOODS. A sheet of patching material comprises two separate sheets of rubber compound, one containing sulphur and an organic accelerator which is rendered more active in the presence of zinc but no zinc activator, and the other containing rubber and a non-migratory zinc activator, superimposing these sheets one on the other and subjecting them to a temperature which will cure the zinc-containing layer while leaving the other layer unvulcanized.—H. A. Morton, assignor to The Miller Rubber Co., both of Akron, Ohio. United States patents No. 1,537,865 and 6.

The Dominion of Canada

MANUFACTURE OF RUBBER. The process comprises vulcanizing uncoagulated caoutchouc at a temperature below that ordinarily employed in hot vulcanizing methods under conditions precluding any substantial coagulation of the caoutchouc during vulcanization.—The Vultex Limited, St. Helier, Jersey, Channel Islands, assignee of Philip Schidrowitz, London, both in England. Canadian patent No. 248,915.

The United Kingdom

PROOFING. In the impregnation of cotton and like material with rubber solution or latex, the material is first treated with a substance which increases its absorptive capacity, such as an alkali, or the carbonate or hydrate of an alkaline earth metal, or mixture of two or more of these.—I. J. Schilthus, 21 Roermondsplein, Arnheim, and D. F. Wilhelmi, Hevea Works, Heveadorp, Holland. British patent No. 228,898.

RUBBER COMPOSITIONS. An acid-proof coating for the walls of metallic vessels is formed of caoutchouc and graphite in which the graphite content increases continuously by stages toward the surface of the coating.—Felten & Guilleaume Carlswerk, Mulheim, Cologne, Germany. British patent No. 229,247.

VULCANIZING RUBBER. An arylaminothiazole is employed as an accelerator of vulcanization. Example: 100 parts of rubber, 8 parts of sulphur, 10 parts of zinc oxide, and 1 part of aniline-benzothiazole are vulcanized in 40 minutes at 144 degrees C.—G. Bruni, 55 Corso Buenos Aires, Milan, Italy. British patent No. 229,253.

VULCANIZING RUBBER. Typical example of cold method: 100 parts of a 10 per cent solution of crêpe in kerosene saturated with hydrogen sulphide are mixed with 15 parts of a 0.7 per cent solution of a 1:2 naphthoquinone in benzene, and 4 parts of a 2½ per cent of sulphur dioxide in benzene is added. The mixture sets in 6 minutes. Without the naphthoquinone the mixture gels in 22 minutes.—Peachey Process Co., Ltd., 83 Pall Mall, and S. J. Peachey, 44 Platts Lane, Hampstead, both in London. British patent No. 229,491.

TRANSPARENT AND TRANSLUCENT RUBBER. This is obtained by the use of zinc or other metallic oxide in a colloidal or finely divided state and in quantity not to exceed one per cent. When suitable accelerators, such as tetramethylthiuram disulphide, with or without hexamethylene tetramine, are used the amount of sulphur may be reduced to two per cent or less, added in colloidal form.—F. C. Jones, 29A. Charing Cross Road, London. British patent No. 229,742.

RUBBER TRANSFERS. These consist of a paper or other suitable base having a layer of rubber on which the picture is formed by a colored rubber mixture. The article to be decorated may be coated with rubber solution or with rubber latex, and after the transfer the coating and picture may be vulcanized.—P. Klein, 90 Thökoly-ut, Budapest. British patent No. 230,236.

Rubber Trade Inquiries

The inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The Editor is therefore glad to have those interested communicate with him.

NUMBER	INQUIRY
606	For addresses of manufacturers of bead cutters.
607	Manufacturers of rubber shoe varnish.
608	Dealers in oil soluble black.
609	How much longer will rubber articles packed in airtight containers retain their life than articles not so packed?
610	Manufacturers of colors used in coloring dipped rubber goods.
611	Manufacturer of hard rubber poker chips.
612	Makers of white rubber soap dishes.
613	Information concerning "Card" brand of reclaim rubber.
614	Source of supply of rubber buttons for bathing suits.
615	Sponge rubber substitutes for inner tubes.
616	Source of supply of deresinated rubber.
617	Address of manufacturer of tire dough.
618	Where pulverized cork may be obtained.
619	Names of firms handling antimonoxysulfid.
620	Rubber firms desiring representation in Austria, Czechoslovakia, Hungary, Poland, Italy, Jugoslavia and the Balkan states.
621	Address of manufacturer of waterproof garments; rubberized cretonnes, percales, etc.; transparent sheet rubber, white and pink; elastic webbing and belts.
622	Manufacturers of low-priced rubber belts.
623	Makers of rubber tubing for a specialty.
624	Source of supply of rubber erasers for pencils.
625	Address of maker of sponge rubber.
626	Manufacturers of crêpe rubber soles.
627	Address of manufacturer of braiding machines.
628	Where tire and tube seconds may be obtained.
629	Addresses of manufacturers of "hydraulic tables."
630	Manufacturer of pencil eraser in form of dice.
631	Address of manufacturer of vacuum cups for attaching to window glass.

Foreign Trade Opportunities

Address and information concerning the inquiries listed below will be supplied to our readers through the Foreign Trade Bureau of The India Rubber World, 25 West 45th Street, New York, N. Y.

NUMBER	COUNTRY AND COMMODITY	PURCHASE OR AGENCY
14,635	Germany—Surgical supplies and rubber stockings	Purchase
14,645	Italy—Belting	Agency
14,674	Canada—Belting	Purchase
14,679	Germany—Pneumatic tires	Agency
14,702	Italy—Tires and rubber and gutta percha technical articles	Agency
14,750	Egypt—Rubber goods, bathing caps, heels, etc.	Agency
14,752	Germany—Rubber overshoes	Purchase
14,753	Australia—Rubber corsets and baby pants	Purchase and Agency
14,754	Denmark—Toy Balloons	Purchase
14,804	New Zealand—Rubber footwear and specialties	Agency
14,826	Haiti—Tennis shoes	Agency
14,831	Dominican Republic—Waists belts; sanitary and surgical rubber goods	Agency
14,886	Germany—Tennis shoes and overshoes	Purchase and Agency
14,887	Uruguay—Tennis shoes and overshoes	Purchase
14,888	Canada—Rubber aprons, doilies, gloves, novelties, etc.	Agency
14,889	Germany—Automobile tires	Purchase and Agency
14,890	India—Hot water bags, ice bags, and tubing	Purchase and Agency
14,895	China—Automobile tires	Purchase
14,930	Germany—Rubber toys, dolls, animals	Purchase
14,981	India—Rubber belting	Purchase and Agency
15,041	India—Rubber tires	Purchase and Agency
15,042	India—Small rubber dolls	Purchase
15,059	Peru—Kubber soled athletic shoes	Agency
15,062	Mexico—Rubber heels	Purchase

FOREIGN RUBBER TRADE INFORMATION

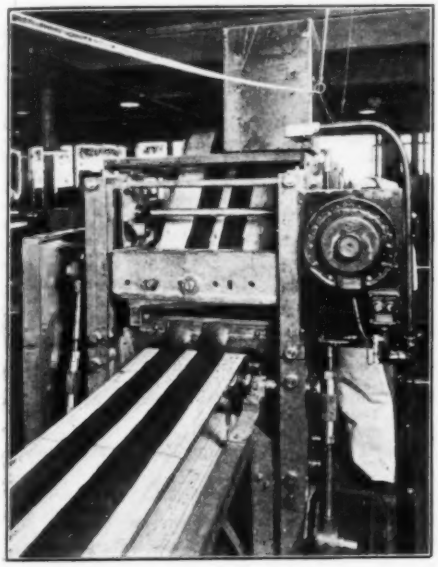
Special circulars containing foreign rubber trade information are now being published by the Rubber Division, Bureau of Foreign and Domestic Commerce, Washington, D. C. The publications which give details of the rubber industry in some one country are marked with an asterisk.

NUMBER	SPECIAL CIRCULAR
854	"Tire Market of Saltillo, Mexico," etc., etc.
862	"Tire Market of Victoria, British Columbia," etc., etc.
*863	"Retail Tire Prices in Finland."
*865	"Automobile Tires Exhibited at the Swiss Automobile Show, Geneva, March 20 to 25, 1925."
*871	"Market for Machinery Belting in Czechoslovakia."
*873	"Canadian Tire Exports Heavy During First Quarter of 1925."
*878	"French Tire Exports During First Quarter of 1925."
*879	"French Rubber Footwear Exports During First Quarter of 1925."

New Machines and Appliances

Tire Tread Measuring and Cutting Machine

An automatic machine for measuring and cutting unvulcanized tire treads is here pictured. Its practical value has for some months been satisfactorily demonstrated in actual tire production. Calendered or tubed tread strips after cooling by passage through water or a long run in air are fed to the cutting machine with a book and pass onto a measuring belt and downward at an angle of 45 degrees through measuring rolls. When the tread is measured it stops. The machine then makes the cut with a punch press action. The conveyor carries the tread onward so that a space intervenes between treads. After the cut is made, the end of the following tread is lifted to clear the knife and the next cycle of measuring and cutting takes place. Changes in length are quickly made.



Utility Tire Tread Cutter

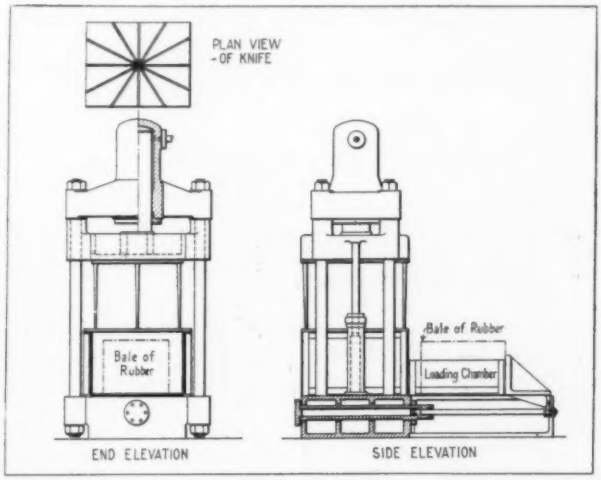
These machines are built in widths of 16, 20, 30 and 40 inches. They will, therefore, measure and cut four treads at a time from the wide type of tread calender. The fact that the treads are cut to exact length saves rehandling for weighing and also the batching of large quantities of end trim.—Utility Manufacturing Co., Cudahy, Wisconsin.

Plantation Rubber Bale Cutting Press

The baling process to which plantation rubbers are subjected produces very solid rectangular blocks of rubber measuring about 23 by 28 by 36 inches. Cutting such masses of rubber into pieces of convenient size for milling, etc., is a slow and costly process although accomplished by various types of power cutters.

A machine capable of slicing at a single stroke a bale of solid rubber into a dozen wedge-shaped pieces represents the latest development for reducing baled rubber to suitable shape and size for handling on rolls or internal mixing machines. The machine is a hydraulic press specially developed for the purpose.

The illustration shows two side elevations and the cutting plan of the press. It is designed to receive a complete bale of rubber. One stroke of the vertical ram pushes the blades through the rubber, dividing it into 12 sections. In order to do this the press is designed of very heavy construction. The advantage of this device is in the large output of cut rubber it can deliver. The press has push-back cylinders for quickly returning the cutting knives, and a loading chamber which receives a new bale while one in the press is being cut. The machine is designed for a cutting cycle of one minute per bale. The press shown is of the moving down type in which the ram is located on top and the knives are attached to the upper or moving crosshead.

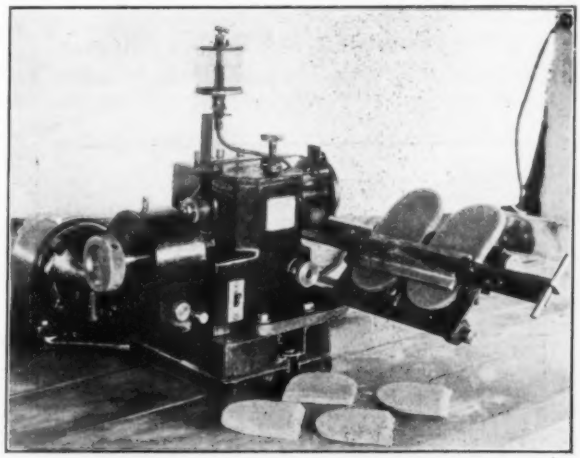


Farrel Hydraulic Cutter for Baled Rubber

This unique and effective press is of special interest to rubber manufacturers because of the necessity for reducing cost in this very obvious way.—Farrel Foundry & Machine Co., Ansonia, Connecticut.

Machine for Wedging Crêpe Rubber Heels

The picture here presented represents a machine for producing the bevel edge on the breast of the so-called wedge crêpe rubber heel. It is a motor driven bench machine of rugged construction, simple and durable. The machine operates on two blanks of crêpe died out as double heels from stock producing four heels without waste at a single cut.

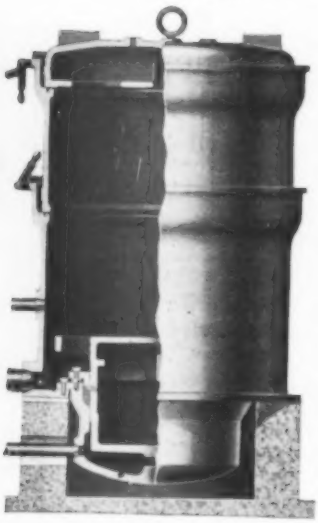


Wills Machine for Wedging Crêpe Heels

The blanks are held on a movable work base or slide on which they are locked in place by a clamp with a pressure equalizer in the center to insure a tight grip of even pressure upon each heel. The table or carriage is then pushed forward past the revolving cutter which splits the blank in halves, producing four perfectly wedged heels at one operation. Water is fed to the knife for lubrication by means of a wick feed.

The unit is very compact and does excellent work. Positively no scrap or waste is produced under this system. Its economy is further indicated by the fact that there is a gain of one pair of heels to each sheet of plantation crêpe 36 by 13 inches in the larger sizes, and a gain of 2 pairs in the smaller one.—Arthur Jackson Wills Co., North Brookfield, Massachusetts.

Short Stroke Heater Press



Williams Hydraulic Tire Press Vulcanizer

The short stroke hydraulic heater press here pictured is well nigh indispensable equipment for experimental work or special production on tires.

To minimize cost of foundation this press was designed with a 6-inch stroke which is sufficient to close molds and take care of variations in mold thicknesses. Its minimum capacity is two molds, and upper sections to accommodate two more molds may be added. In use the cover and upper section can be handled together giving better access to the molds.

The apparatus is entirely of steel castings, except the ram. Automatic flap packing is supplied for the lid and joints and a special type of hydraulic packing is used.—The Williams Foundry & Machine Co., Akron, Ohio.

Full Involute Gears for Rubber Calenders

In the rubber industry the production of calendered sheet stock free from markings from gear teeth and rolls has been very difficult until the introduction of full involute gears produced by a new system of generation. The machines used to generate gears by any method can be made to practically equal accuracy; the cutting tool used, therefore, becomes the crucial factor that determines the gears produced. On Maag gears the cutter is itself the true involute basic rack. This basic rack, shown in Figure 1, is of straight line form. Its relieved flanks are plane surfaces, easy to make accurately and easy to check.

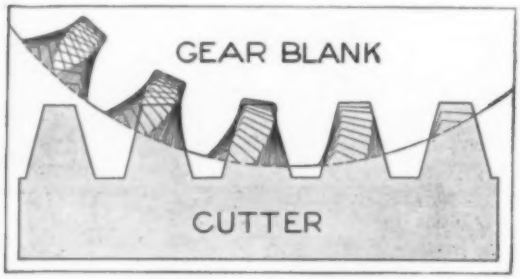


Fig. 1. Basic Rack—Maag System of Gear Cutting

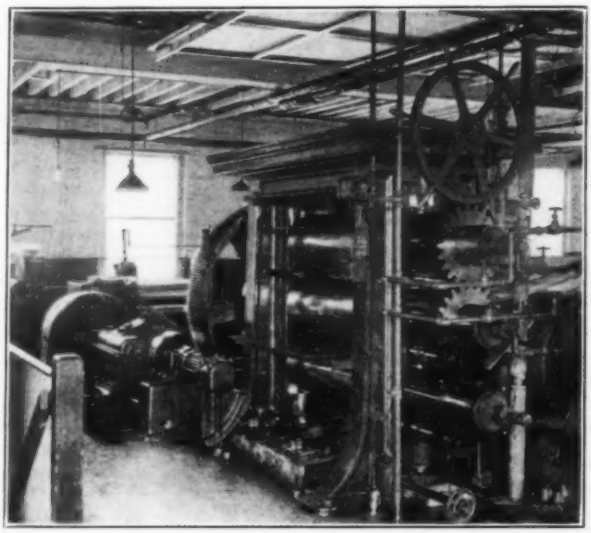


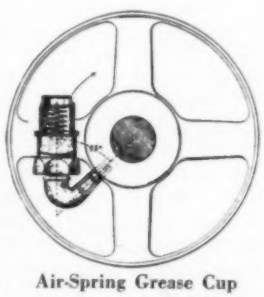
Fig. 2. Maag Spur Gears Used From Motor Reduction Through Mill Pinions

In operation, the gear blank is rolled along the face of the cutter as it reciprocates for the distance of one circular pitch. The blank is then moved back without rotation to the starting point. The generating motion is controlled by an accurate lead screw and accurate worm gear. The inherent accuracy of the straight line cutter is thus preserved in the generated gear. Only one cutter is required for mating gears independent of the number of teeth in the gear, to produce theoretically correct profiles.

Gears thus produced have many distinct advantages, such as quietness, strength, large reductions, constant velocity, minimum vibrations, accuracy, etc. Maag spur gears have been successfully employed on rubber calenders to produce absolutely unmarked calendered surfaces. One such application is illustrated in Figure 2, where full involute spur gears were used exclusively.—Niles-Bement-Pond Co., 11 Broadway, New York, N. Y.

Loose Pulley Grease Cup

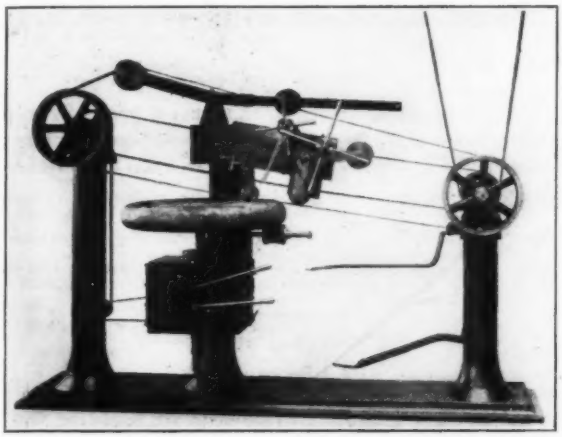
Lubrication of loose pulleys is quite as essential as that of shafting yet is frequently neglected. The illustration shows the construction and application of a compressed air grease cup for loose pulley lubrication. Its special feature is that by the arrangement indicated the centrifugal action cannot interfere with proper feeding of the grease, and the circumferential action assists the compressed air to insure positive and effective feeding regardless of the speed of the pulley. No external means of any kind is required to provide the compressed air, as the compression is provided automatically by the act of screwing down the top of the grease cup itself.—Hunter Pressed Steel Co., Lansdale, Pennsylvania.



Air-Spring Grease Cup

Air Bag Cleaning Machine

The machine here pictured was developed to meet the very obvious need of a machine for grinding the surfaces of air bags. The air bag is supported for grinding held in a revolving disk. The grinding is done by an endless abrasive belt which is made to conform to the contour of the bag by means of a flanged idler and a rubber covered roller. This machine cleans the surfaces of an air bag much quicker and cheaper than any other design of



New Haven Air Bag Cleaner

machine. As pictured, the cleaning nozzles, exhaust and guards are not shown. The nozzles are placed just below the drive part of the wheel. The use of air pressure blows away the loose material from the grinding belt, thus maintaining full cutting power. The belt surfaces are about No. 12 grain. Two complete revolutions are sufficient to clean the worst specimen of bag. The machine will also clean bags of the sizes used for balloon and truck tires.—The New Haven Sherardizing Co., Hartford, Connecticut.

Safety Hand Lamp

There are many places and jobs about a factory, shop, or storehouse where an electric safety hand lamp is decidedly convenient. A lamp of this sort is now available. It comprises a handle of black enameled maple containing the lamp socket and a strain relief cord clamp. The socket is weatherproof, made of molded insulation. The guard is of aluminum alloy in two parts held together by a wing nut and surmounted by a swivel hook for hanging the lamp and directing the light.—Crouse-Hinds Co., Syracuse, New York.

Low Maintenance of Westinghouse Motors

As illustrating the low cost of maintenance necessary on the modern Westinghouse Squirrel cage motor, that company states that the cost of repairs on 20 such motors installed between 1899 and 1902 was $1.12 per motor per year, and the motors are still running and doing their work just as well as they did the day they were connected up.—Westinghouse Electric & Mfg. Co., East Pittsburgh, Pennsylvania.

Machinery Patents

The United States

(1,533,139) MACHINE FOR TRIMMING RUBBER HEELS. The feed and guard member has the form of a bell rotated about a vertical axis and partly enclosing a rotary cutter. The heel to be trimmed is placed on the turntable disk, passing the rind through the gap between the lower edge of the bell and the cutting edge. The rotation of the bell causes the heel to advance and the disk allows it to turn until its entire edge is trimmed.—E. D. Putt and W. C. Stevens, Akron, Ohio, assignors by mesne assignments to United Shoe Machinery Corporation, Paterson, New Jersey. United States patent No. 1,533,139.

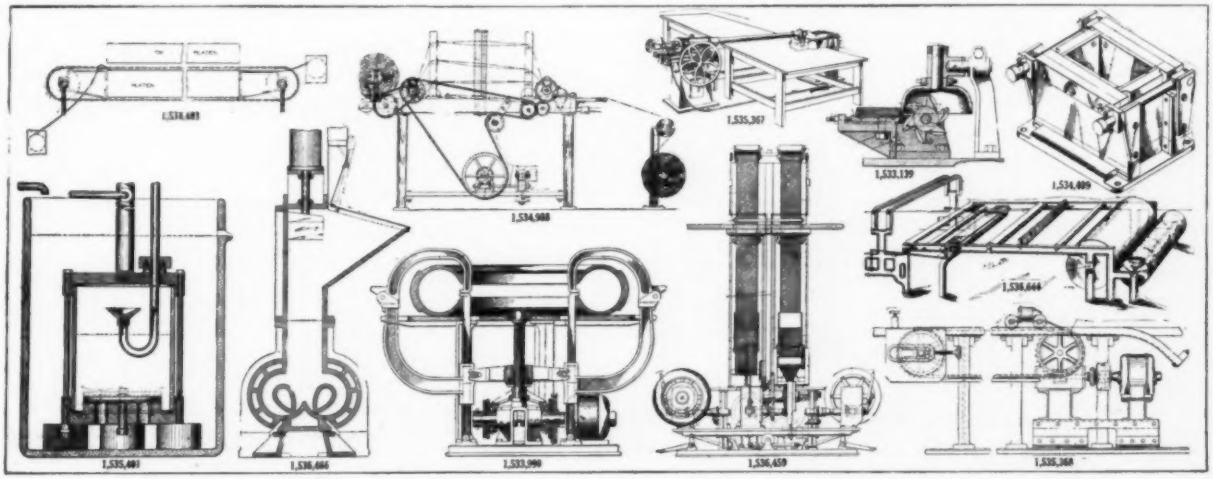
(1,533,990) TIRE OPENING MACHINE. This machine spreads the beads of large size pneumatic tires so that the tubes may be readily inserted. The base of the machine supports a table on which a tire is laid. Below the table is a motor-operated gearing by which a vertical screw is revolved, raising and lowering four hooks. These extend above and are hinged at the edge of the table to allow placing the tire and adjusting the hooks in the bead opening. The screw elevates the upper set of hooks opening the tire. After insertion of the tube the mechanism is reversed and the tire casing closed.—W. C. Hough, Cuyahoga Falls, assignor to The Firestone Tire & Rubber Co., Akron, both in Ohio. United States patent No. 1,533,990.

(1,534,403) STRIPPING VULCANIZED MATERIAL FROM MOLDS. Vulcanized sheet material is stripped from the lower platen press by the action of a small roller pivoted between two endless chains extending along each side of the platen and operated by hand cranks.—F. J. Lawler, Milwaukee, Wisconsin, assignor to The Fisk Rubber Co., Chicopee Falls, Massachusetts. United States patent No. 1,534,403.

(1,534,409) MOLD FOR MAKING HARD-RUBBER CONTAINERS. This mold possesses features of construction and combination of parts easily changed to produce boxes of different sizes or shapes. The side pieces are held upon the base by supporting ridges. The edges of the end pieces are held in grooves in the side pieces. The latter are drawn together by hinged clamping bolts, each held in place by a wedge.—J. E. Perrault, assignor to Hood Rubber Co., both of Watertown, Massachusetts.—United States patent No. 1,534,409.

(1,534,988) FLAP CUTTING AND BUILDING MACHINE. Friction coated fabric is severed while being continuously fed from a supply roll, slit into strips of proper width, superposed in plies and spooled without wrinkles. The machine is operated by motor driven chain gears. The fabric enters the machine between tension rollers, passing on through slitting knives. The ribbons formed are separated into groups of 4 widths by separating rollers. Succeeding rollers bring each group of ribbons into alinement with its respective winding drum.—J. E. Perrault, assignor to Hood Rubber Co., both of Watertown, Massachusetts. United States patent No. 1,534,988.

(1,535,367) ASSEMBLING DEVICE FOR TUBE-END CLAMPS. This machine for applying sliding clamps to rubber tubes on mandrels comprises supports for a mandrel with clamps loosely applied and a pneumatic hammer for driving the clamps toward each other on the tube with a series of sharp blows.—Thomas P. Little, assignor to The Fisk Rubber Co., both of Chicopee Falls, Massachusetts. United States patent No. 1,535,367.



(1,535,368) HOSE OR TUBING STRIPPING APPARATUS. An air-nozzle for applying air under pressure between a hose and its mandrel is mounted on rails placed either side of a moving belt, which advances the hose along the table as it is released by the air pressure from the nozzle.—F. L. MacAleese, Milwaukee, Wisconsin, assignor by mesne assignments to The Fisk Rubber Co., Chicopee Falls, Massachusetts. United States patent No. 1,535,368.

(1,535,401) AIR AND WATER INJECTOR. This apparatus delivers a definite measured quantity of water together with a charge of air in the inflation of air bags used in the vulcanization of tire casings. It comprises a water chamber, a supply pipe for introducing compressed air into the chamber, a delivery pipe having an opening below the normal water level in the chamber, a check valve to permit water to flow into but not out of the chamber, and a source of water supply to the chamber through the chuck valve at a pressure at all times less than that of the compressed air.—C. H. Desautels, Springfield, assignor to The Fisk Rubber Co., Chicopee Falls, both in Massachusetts. United States patent No. 1,535,401.

(1,536,459) MACHINE FOR THE MANUFACTURE OF TIRE CASINGS. A combination of an assembly table and tire making machine between which the fabric is conducted by mechanism with provision for forming an intermediate storage loop of fabric. On the tire machine the building core may be shifted in two positions and two strips of bias fabric may be guided from the table to the core in its two positions under suitable control.—W. C. Stevens, assignor to The Firestone Tire & Rubber Co., both of Akron, Ohio. United States patent No. 1,536,459.

(1,536,466) MACHINE FOR TREATING RUBBER. In combination with the feed hopper of an enclosed rubber mixer an air duct with damper is connected to carry away dust and fumes arising in the mixing operation, and for the protection of the workman.—F. H. Banbury, assignor to Birmingham Iron Foundry, Derby, Connecticut. United States patent No. 1,536,466.

(1,536,644) FABRIC-TREATING MACHINE. This machine is adapted to feed a strip of fabric from a reweaving roll, through a cutting mechanism which severs the cross-woven threads, and thence into a loom to be rewoven. The machine removes the defective threads and reweaves cord fabric at very low cost and in a minimum of time, rendering it suitable for the manufacture of tires.—C. W. Young, Goodyear, Connecticut, assignor to The Goodyear Tire & Rubber Co., Akron, Ohio. United States patent No. 1,536,644.

Other Machinery Patents

The United States

1,534,030 Apparatus for drying latex. J. G. Coffin, Hempstead, New York, assignor to The General Rubber Co., New York, N. Y.

1,534,149 Bracelet spring clamp for tube cores. H. Willshaw, assignor to Dunlop Tire & Rubber Corporation of America, both of Buffalo, New York.

1,534,250 Tire making apparatus. F. J. Shock, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

1,534,257 Heel trimming machine. J. A. Brogan, Lawrence, Massachusetts, assignor to United Shoe Machinery Corporation, Paterson, New Jersey.

1,535,358 Conveyor for tire factories. M. H. Pade, assignor to The Firestone Tire & Rubber Co., both of Akron, Ohio.

1,535,362 Air-bag puller. E. C. Taylor, Longmeadow, and C. H. Desautels, Springfield, assignors to The Fisk Rubber Co., Chicopee Falls, all in Massachusetts.

1,535,392 Protecting device for mixing mills, etc. W. S. Ashton, assignor to Fisk Rubber Co., both of Chicopee Falls, Massachusetts.

1,535,425 Stock rack. T. P. Little, assignor to Fisk Rubber Co., both of Chicopee Falls, Massachusetts.

1,535,865 Flexible coupling. C. A. Schell, Cleveland, Ohio, assignor to Thermoid Rubber Co., Hamilton Township, New Jersey.

1,536,087 Vulcanizing apparatus. J. L. G. Dykes, Chicago, Illinois.

1,536,161 Apparatus for making cushion tires. J. M. Straub, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

1,536,376 Tire making machine. J. J. Convery, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio.

1,536,377 Tire making machine. J. J. Convery, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio.

1,536,589 Apparatus for supplying materials in a desired ratio of weights. A. W. Keen, assignor to General Rubber Co., both of New York, N. Y.

1,536,857 Molds for making rubber masks or face pieces for respirators, inhalers, etc. A. M. Hudson, assignor to M. A. Rice, both of New York, N. Y.

1,536,879 Rubber sandal assembling machine. T. Carter, Detroit, Michigan.

1,536,928 Tire buffing machine. J. Keitz and F. Tregesser, Jr., Jeannette, Pennsylvania.

The United Kingdom

229,381 Tire repair vulcanizer. A. Matthews, V. S. Malley, and H. W. Rawley, 14A George street, Brighton, Sussex.

229,404 Machine for making rubber sheets from latex. R. Russell, Yaldersgate, Beechwood, Heaton Park, Manchester, and H. Broomfield, 23 Davenport Road, Hazel Grove, Stockport.

229,423 Tire building machine. Dunlop Rubber Co., Ltd., 1 Albany street, Regent's Park, London, C. Macbeth and A. Kay, Fort Dunlop, Erdington, Birmingham.

230,250 Machine for testing tennis and other balls. P. H. Stevens, Oakdene, Weston Road, Abington Park, Northampton.

230,357 Machine for making rubber heels. E. C. Marks, 57 Lincoln's Inn Fields, London. Lawson-Whitehead Co., 35 Hartford street, Boston, Massachusetts, U. S. A.

The Dominion of Canada

248,945 A. H. Bates, Cleveland Heights, Ohio, assignee of J. Schaefer, Yonkers, New York, both in U. S. A.

249,496 Tire vulcanizer. S. Hill-Wood, London, W. 1, England.

Germany

Patents Issued, With Dates of Issue

412,462 (June 28, 1923). Vulcanizing table for making footwear with rubber soles. Société Commerciale & Industrielle Ste. Ame, Liege, Belgium; represented by: Dr. G. Döllner, M. Seiler and E. Maemecke, Berlin S. W. 61.

412,843 (March 6, 1924). Vulcanizing apparatus. Paul Barré, Paris; represented by: O. Siedentopf, W. Fritze and G. Bertram, Berlin, S. W. 68.

413,126 (November 26, 1922). Vulcanizing press. Etablissements A. Olier, Clermont-Ferrand, France; represented by: Dr. G Döllner, M. Seiler and E. Maemecke, Berlin S. W. 61.

413,127 (August 13, 1924). Machine for making tire covers with wire inserts. Société Anonyme des Pneumatiques Dunlop, Paris; represented by: Dr. R. Wirth, C. Weihe, Dr. H. Weil, M. Wirth, Frankfurt-am-Main, and T. R. Koehnhorn and E. Noll, Berlin S. W. 11.

413,232 (July 20, 1922). Press with foot-lever to glue rubber soles with leather tip to footwear. Carl Brebeck, Unterdörnerstrasse 39, Barmen.

Design Patents Issued, With Dates of Issue

904,524 (November 21, 1924). Device for mounting pneumatic tires on fellies. Dr. Carl Weidmann, Leichlingen.

904,637 (March 4, 1925). Vulcanizing equipment. Josef Zängl, Feilitzschstrasse 6, Munich.

904,667 (October 20, 1924). Hammer mill for mechanically producing so-called seams in rubber goods. Friedrich Mücke, Raumerstrasse 10, Berlin.

904,779 (March 4, 1925). Steam vessel for vulcanizing, etc. Christian Reitzammer, Hirschelgasse 26, Nürnberg.

905,297 (March 10, 1925). Kettle press for rubber vulcanizing apparatus for dental purposes. Wilhelm Hordan, Oranienburgerstrasse 51, Berlin.

Process Patents

The United States

16,047 (Reissue) Surfacing sponge rubber. T. W. Miller, assignor to The Faultless Rubber Co., both of Ashland, Ohio.

1,534,104 Method of making a golf ball. J. R. Gammeter, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

1,534,477 Method of coating asbestos cloth with rubber. E. C. Weise, Milwaukee, Wisconsin, assignor by mesne assignments to The Fisk Rubber Co., Chicopee Falls, Massachusetts.

1,534,527 Process of producing a sheet rubber fabric having on its face a reproduction of a textile fabric. H. Joseph Grayling, Michigan, assignor by mesne assignments to Tucker Rubber Corporation, Buffalo, New York.

1,534,777 Process of molding pneumatic casings. A. A. Frank, Milwaukee, Wisconsin, assignor by mesne assignments to The Fisk Rubber Co., Chicopee Falls, Massachusetts.

1,535,354 Method of making hollow rubber articles. C. W. Steele and R. T. Griffiths, assignors to The Miller Rubber Co., both of Akron, Ohio.

1,535,429 Method of making tire beads. M. A. Marquette, assignor to The Fisk Rubber Co., both of Chicopee Falls, Massachusetts.

1,535,647 Method of making cord stock for pneumatic tires. J. B. Brennan, Orange, New Jersey.

1,536,080 Tire bead and method of making tires. E. E. Davidson, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

1,536,700 Method of making hollow rubber articles. F. F. Brucker, assignor to The Miller Rubber Co., both of Akron, Ohio.

1,536,723 Method of making tires. F. G. Neal, Springfield, and D. F. Logan, Chicopee Falls, assignors to The Fisk Rubber Co., Chicopee Falls, all in Massachusetts.

1,536,866 Process of making rubber shoes. J. Kamborian, Watertown, Massachusetts.

The Dominion of Canada

248,942 Method of making a hollow rubber article having a whistle member. A. H. Bates, Cleveland Heights, Ohio, assignee of F. T. Roberts, Yonkers, New York, both in U. S. A.

248,944 Method of making hollow rubber articles. A. H. Bates, Cleveland Heights, Ohio, assignee of F. T. Roberts, Yonkers, New York.

The United Kingdom

228,908 Method of testing plastic materials, such as rubber, etc. Soc. D'Enterprise Meuniere, 14 Rue de Marignan, Paris, and M. Chopin, 43 Rue de Billancourt, Boulogne-sur-Seine, France.

229,004 Method of molding rubber balls. C. H. Gray, 106 Cannon street, London.

Germany

Patents Issued, With Dates of Issue

412,307 (September 25, 1923). Method of producing colored designs on thin sheet rubber. Gummiwarenfabrik. Carl Plaat, Köln-Nippes.

412,655 (March 18, 1924). Method of making hollow body closed on all sides of rubber or other plastic masses that can be hardened. Paul Pick, Zurich, Switzerland; represented by: S. Meier, Berlin, S. W. 61.

412,901 (September 28, 1924). Method of making seamless tires. Richard Hagemann, Hamburgerstrasse 41, Braunschweig.

412,902 (June 21, 1924). Mass vulcanization of tire covers. Jacobus Spyker, Amsterdam; represented by: Dr. A. Mestern, Berlin S. W. 48.

413,038 (November 2, 1923). Method and apparatus of making rubber sheets and molded pieces directly from rubber latex. The Anode Rubber Co., Limited, London; represented by Dr. W. Karsten and Dr. C. Wiegand, Berlin, S. W. 11.

The Editor's Book Table

Book Reviews

"TECHNOLOGIE DER KAUTSCHUKWAREN." BY KURT GOTTLOB. Published by Friedrich Vieweg & Sohn A.-G., Braunschweig. Paper, illustrated, 352 pages, 6¼ by 9½ inches.

THE first edition of this work appeared in 1915. Since then such progress has been made in the knowledge of the technology of rubber that rearrangement of and additions to the older work became necessary. The present edition is divided into introduction and a first part dealing with general technology of rubber and a second part treating of the special technology of rubber goods. In the first portion the plantation rubber industry, physical properties of rubber, testing and examining crude and vulcanized rubber, compounding, vulcanization and accelerators, aging, are the principal subjects discussed. The second part treats of hard and soft rubber goods as technical goods, toys, footwear and accessories, rubberized fabrics, tires, by the hot vulcanization method, and of cut sheet (patent-gummi) and seamless rubber goods by the cold cure process.

There are several illustrations of machines and apparatus, graphs and tables, besides an index of authors and one of subjects. Frequent reference is made to foreign authors, particularly to English and American investigators.

"ZSIGMONDY-FESTSCHRIFT." SUPPLEMENT TO THE KOLLOID-Zeitschrift, No. 36. Published by Theodor Steinkopff, Dresden. Heavy paper, illustrated, with frontispiece photo of R. Zsigmondy, 400 pages, 9 by 10 inches.

A number of his friends, admirers, and pupils have collaborated under W. Bachmann and Wo. Ostwald on this special anniversary number of the Kolloid-Zeitschrift in honor of the sixtieth birthday of Richard Zsigmondy.

The numerous articles in this volume cover a variety of subjects, one by Herbert Freundlich and Ernst A. Hauser treating of the colloid chemistry of rubber latices. Besides the many plates accompanying the text there is a frontispiece, a fine sepia photo of the well-known investigator.

New Trade Publications

AN ILLUSTRATED CATALOG ENTITLED "PRESSURE REGULATING DEVICES" which contains much information regarding balanced and reducing valves, and pump and draft regulators, is being issued by the Mason Regulator Co., 1191 Adams street, Dorchester, Massachusetts.

MUCH INFORMATION OF VALUE TO THE RUBBER INDUSTRY APPEARS in the sixth annual edition of "Facts and Figures of the Automobile Industry—1925 Edition," as issued by the National Automobile Chamber of Commerce, 366 Madison avenue, New York, N. Y.

THE APRIL, 1925, ISSUE OF THE TIRE RATE BOOK IS AS USUAL AN excellent quarterly review of conditions in the tire industry. The present issue contains some valuable data regarding balloon casings.

AN ATTRACTIVELY PRINTED AND FULLY ILLUSTRATED CATALOG ENtitled "Tructors—Material Handling Equipment" is being sent out by The Elwell-Parker Electric Co., Cleveland, Ohio, manufacturer of electric industrial tractors and trucks. Some of the well-known rubber companies are included among the users of the Elwell-Parker products.

MUCH INFORMATION ON RUBBER PLANTING APPEARS IN THE sixteenth annual report of the council of The Rubber Growers' Association, Inc., for the year ended December 31, 1924. It was found convenient to also include in this report the association's transactions during the first three months of 1925.

DETAILED INFORMATION REGARDING THE FIRST CHEMICAL EQUIPment Exposition, to be held June 22 to 27 inclusive in Providence, Rhode Island, appears in a bulletin entitled "The Flow Sheet," now being published by the Association of Chemical Equipment Manufacturers, 1328 Broadway, New York, N. Y.

AN ATTRACTIVELY PRINTED AND ILLUSTRATED BOOKLET ENTITLED "The Story of Rayon—the Newest Textile Yarn" is being sent out by The Viscose Co., 171 Madison avenue, New York, N. Y.

Recent Articles Relating to Rubber

Velocity Function of the Viscosity of Disperse Systems. The author suggests that all the deviations of colloidal solutions from the Hagen-Poiseuille law should be grouped together under the name of "structural viscosity." Such deviations are shown in the influence of change of pressure or rate of flow on the viscosity. Even with colloids exhibiting "structural viscosity," measurements in the ordinary capillary viscosimeter with a constant height of filling are trustworthy and are termed "isomanic measurements." A simple pressure-viscosimeter is described for measuring the effect of variations in the rate of flow. The capillary viscosimeter is modified by using a short, narrow capillary with an upper lens-shaped bulb and by increasing the length of the arms to 20—50 cm. The filling tube is wide and is graduated throughout its length. The instrument is calibrated for water for different heights of filling.—Wo. Ostwald, *Kolloid-Zeitschrift*, 36, 99-177 (1925).

Acid-Resistant Rubber Coatings. A brief description of the type of compounds, the mechanical difficulties of coating and the electric methods of testing for leakage applicable to acidproof linings, coverings, tubes, etc. Emphasis is laid on the value of paraffin wax and of graphite in such compounds and the necessity for a careful choice of cure for a given formula.—F. Ahrens, *Chemiker-Zeitung*, 48, 748 (1924).

Laboratory Tests of Airbag Compounds. This is a detailed description of current methods of manufacture of rubber airbag compounds and their uses. Tests are described which were designed to determine the best type of rubber compound for maximum resistance to cracking in use. This was carried out by heating the compounds (1) in the presence of air under pressure at 287 degrees F. and (2) immersed in S at 80 degrees, 100 degrees and 130 degrees. The relative value of different accelerators and the extent to which compounds could be loaded to advantage were studied particularly. In hot air there was no marked difference in the rate of oxidation which could be attributed to the specific action of the accelerator, the resistance due to the accelerators being of less influence than the deterioration due to "depolymerization." In sulphur, however, the different accelerators imparted widely differing resistances to cracking. The addition of a large volume of fillers tended to increase the resistance both to heat and to oxidation. Those accelerators which were of least influence on the vulcanizate with widely varying proportions of sulphur had the most favorable influence in increasing the resistance to cracking in the sulphur immersion test.—A. H. Smith and H. K. Eckart, *India Rubber Review*, 24, No. 11, 78, 80, 94, 98 (1924).

New Research on the Cause of the Elasticity of Rubber. (German). J. R. Katz, *Gummi-Zeitung*, May 1, 1925, 1044-5.

Progress in Solvent Recovery. (German). Dr. K. G., *Gummi-Zeitung*, April 17, 1925, 960-2. Diagram.

Rubber Mill Phenomena. "There may be in the mixing mill a closed mechanical circuit in which more energy than is taken from the external source is circulating." This extraordinary and abstruse new theory is discussed and illustrated by various analo-

gies, hydraulic, electrical, mechanical, and other. In conclusion the author states: "All the published figures on internal mixers and the two fixed roll casing washers of the Werner-Pfleiderer type, indicate very much lower horsepower per pound of rubber, washed, masticated or mixed, this, in spite of the fact that the rubber is forced by the rolls or rotors round the internal chamber of the machine. One would expect, because of the high friction existing, a much higher torque and a greater consumption of energy, whereas the exact opposite is the case.

If this assumption of an internal energy circulation is true, it goes to prove that fundamentally the internal type of mixer is correct, and is a distinct step forward in mill design.—H. C. Young, *India-Rubber Journal*, April 28, 1924, 609-616. Illustrations and diagrams.

Para-Nitro-Phenol as a Mould Preventive. Part IV. The treatment has no effect on the tensile properties of the rubber. At the most it has a slight retarding effect on the rate of cure, but even this is not apparent in the case of air-dried specimens, or at any rate is not appreciable. Although para-nitro-phenol inhibits the growth of the spot producing organisms it does not hinder the growth of those organisms which break down the more complex nitrogenous substances (proteins) with the formation of nitrogen bases which act as vulcanization accelerators. The general experience is that spotted crepe cures more slowly than clean crepe; the effect produced, however, is small and in this instance is masked by the activity of the organisms which produce the organic bases.—H. P. Stevens, *Bulletin Rubber Growers' Association*, April, 1925, 243-4.

Color Mixing. Diagrams. Anonymous, *India-Rubber Journal*, April 18, 1925, 621-623.

Notes on Standardization in the Rubber Industry. A discussion of need of standardizing rubber-ware manufacture, and suggested system of factory organization to attain this object.—Fordyce Jones, before the Institution of Rubber Industry, April 6, 1925. *India-Rubber Journal*, April 11, 1925.

The Colloid Chemistry of Rubber Latices. A comprehensive study of the rubber latices by the foremost authorities on the subject, covering its colloid nature and characteristics. Illustrated.—H. Freundlich and E. A. Hauser, *India-Rubber Journal*, April 25 and May 2, 1925, 653-655; 693-696.

Some Problems of the Paint and Rubber Industries. A paper read before the Oil and Color Chemists' Association, April 23, 1925. A review of the analogous problems in the paint and rubber industries. Discussion of the bearing of particle size and shape and the problems of aging.—B. D. Porritt, *India-Rubber Journal*, May 2, 1925, 691-693.

Rubber Mixing Mill Phenomena. An analytic discussion of the mechanics of rubber mixing, "showing that there is a clear, concise and definite mathematical reason for the rapid wear upon the gear teeth and the high pressures obtained in practice upon the journals." Illustrated.—Francis J. Bostock, *India-Rubber Journal*, May 9, 1925, 731-732.

The Coloring of Rubber Products.—Mark S. Grant, *Rubber Age*, New York, April 25, 1925, 57-59.

Vulcanization and Accelerators. Part II. Serial— André Dubosc, *Rubber Age*, New York, April 25, and May 10, 1925, 60-61; 96-97.

The Standardization of Wedge Belts. *Gummi-Zeitung*, April 3, 1925, 898-900. Tables, diagrams.

On the Influence of Inorganic and Organic Accelerators on the Temperature of Rubber Mixings During Vulcanization, III.—F. Kirchhof, *Gummi-Zeitung*, April 3, 1925, 892-895. Graphs, tables.

From the History of Rubber. III. *Gummi-Zeitung*, April 10, 1925, 941-944.

On Impregnating Cotton Threads and Fabrics with Rubber Latex.—J. Schilthuis (Communication from the National Fiber Research Institute, Delft, Holland), *Gummi-Zeitung*, April 17, 1925, 958-960. Tables.

Judicial Decisions

Terkelsen Machine Co. vs. Pierce Wrapping Machine Co. United States Circuit Court of Appeals for the First Circuit. Appeal from the District Court of the United States for the District of Masachusetts. May 5, 1925. No. 1800.

The case represents an appeal from the decision of the Federal District Court for Massachusetts, where the verdict was rendered that there had been an infringement by the Terkelsen Machine Co. of patents held by the Pierce Wrapping Machine Co. This decree of the District Court was later reversed by the order of the Court of Appeals, the case being remanded to the first-mentioned court with directions to dismiss the bill, the appellant recovering costs in both courts.

Appraisers' Decisions

United States vs. Globe Overseas Corporation (No. 2481). United States Court of Customs Appeals. Appeal from Board of United States General Appraisers, G. A. 8867 (T.D. 40424). Protest against the assessment of duty by the collector of customs at the port of New York.

NOVELTY SPONGES.—The merchandise involved in this appeal was invoiced as "novelty sponges." It was described by the appraiser as "novelty rubber sponges in the form of dogs, Santa Claus, clowns, etc., in the opinion of this office suitable only for the amusement of children." It was returned by the appraiser, and assessed for duty by the collector, as toys, at 70 per cent ad valorem, under paragraph 1414, of the tariff act of 1922.

In its protest to the collector's classification, the importer claimed that the merchandise was properly dutiable at 25 per cent ad valorem under paragraph 1439, as manufactures of india rubber, not specially provided for, or as sponges at 15 per cent ad valorem, or manufactures of sponges at 25 per cent ad valorem under paragraph 1447, or as toilet brushes or other brushes at 45 per cent ad valorem under paragraph 1407.

The Board of General Appraisers sustained the protest, and held that the merchandise was dutiable at 25 per cent ad valorem under paragraph 1439, as manufactures of india rubber not specially provided for, and the Government appealed. The final decision was that the previous judgment should be affirmed.—*Treasury Decisions*, Volume 47, No. 19, page 41.

No. 49253—Protests 965918, etc., of Fuchs & Lang Mfg. Co. (New York). Before Board 2, April 24, 1925.

PRINTERS' BLANKETS.—Printers' blankets classified as cotton chief value under paragraph 266, tariff act of 1913, are claimed dutiable as manufactures in chief value of india rubber at 10 per cent under paragraph 368, or at 25 per cent under paragraph 369 or 254. Importations under the tariff act of 1922 were classified at 40 per cent under paragraph 921 and are claimed dutiable at 25 per cent under paragraph 1439, or under paragraph 907 or 1440.

Opinion by Weller, G. A. It was found that the printers' blankets in question are imported in rolls about 24 yards in length and from 30 to 67 inches wide, made of soft rubber and used on lithographic presses, and that the word waterproof is never applied to them. They were held dutiable on this record as manufactures in chief value of india rubber at 10 per cent under paragraph 368, tariff act of 1913, or at 25 per cent under paragraph 1439, tariff act of 1922.—*Treasury Decisions*, Volume 47, No. 19, page 21.

ARGENTINA INCREASES TIRE IMPORTS

During the past three years the imports into Argentina of American-made tires and tubes have steadily increased from a total value of $1,141,545 for 1922 to $1,317,512 for 1923, and $1,551,422 for 1924. Values for casings during these three years are estimated at $987,187, $1,125,720, and $1,290,836, respectively, the figures for inner tubes being $141,640, $159,983, and $159,322. Values for solid tires advanced from $12,718 in 1922 to $31,809 in 1923, and $101,264 in 1924.

New Goods and Specialties

Flexible Rubber Base for the Telephone

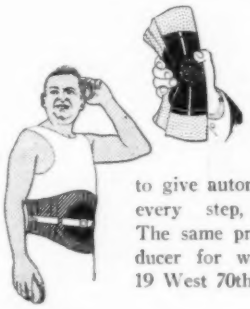
One of the newest uses for rubber is as a substitute for the felt pad of the telephone base. The manufacturer claims that the rubber is a decided improvement, eliminating all shocks and microphonic noises and assuring a clear telephone conversation, as well as preventing marring or scratching the polished surface of a desk. The rubber base pad may be had in brown or green.—A. H. Irvin Co., Inc., 1015 Chestnut street, Philadelphia, Pennsylvania.

Telephone with Rubber Base

Two-Color Picture Balloons

The Barr Rubber Products Co., Sandusky, Ohio, manufacturer of balloons, balls, tubing and molded rubber goods, is marketing an attractive line of balloons imprinted with representations of popular characters from the comic sections of newspapers and also a line of two-color picture balloons representing birds, etc., in their natural coloring.

Rubber Waistline Reducer for Men



Rubber Reducer and Automatic Massage Device

The brother of the rubber corset and reducing girdle for women is the automatic waistline reducer illustrated. It is made of light weight soft pliable rubber, extremely flexible, and employs a "vacuum applicator" which is designed to give automatic massage with every breath and every step, according to the manufacturer. The same principle is applied to a hip-length reducer for women's wear.—Dr. Thomas Lawton, 19 West 70th street, New York, N. Y.

Supre-Macy Tires

R. H. Macy, 34th street and Broadway, New York, N. Y., is marketing a line of 32 by 4 six-ply cord tires and gray rubber tubes under the trade name "Supre-Macy." The descriptive sales slogan is: "High up in Quality; still down in price."

Rubber Suction Cups on "Kiddie Toylette"

A bathroom accessory which is its own best salesman is a device to make the adult seat available for infants and children. It is provided with rubber suction cups which the weight of the child presses against the adult seat, thus holding the accessory seat in place. When desired, it is simply placed over the adult seat, and when the cover is raised as far as it will go it locks itself automatically with a latch bar on the side arm and an attached spring clamps onto the standard seat. A safety strap is provided to hold the baby in securely. When not in use the Kiddie Toylette is released by tripping the latch and lowering the cover. It may then be folded compactly and stowed away.—Kenney-McCandless Corp., 1030 Jay street, Rochester, New York.

THERE WAS BORN RECENTLY TO THE DUNLOP TIRE & RUBBER Goods Co., Ltd., Toronto, a husky new oversize tire, the Bus Truck Special, built for strenuous heavy duty taxi and truck work. This is a six-ply tire containing very flexible cord material and special cushion stock.

Cigarette Extinguisher and Ash Tray Combined

The "It's Out" cigarette extinguisher and ash tray pictured has a rubber ring around its base, which makes it of interest to rubber dealers, but its general handiness and small retail price promise to make it a best seller among smokers' supplies. The cigarette is simply slipped into the tilting tube and "it's out." Then a flip of the finger dumps it into the tray, which is of porcelain enamel mounted on the non-scratching base. The tray is easily taken out for washing, so that the smoker's comfort is not marred by untidiness or the smell of smouldering tobacco. —Cooper Oven Thermometer Co., Pequabuck, Connecticut.

"It's-Out" Cigarette Extinguisher

Inflatable "Airaft" for Sportsmen

The "Airaft" illustrated is made of multi-ply rubberized fabric, the same as is used in the manufacture of balloons and dirigibles. No framework of either wood or metal is used, the design of the inflated members being relied upon to give the boat its form. This makes it possible to roll it into a small parcel when deflated so that it will fit into the 18 by 12 by 5 inches carrying case provided or into any form convenient for storing. The boat is in four compartments, divided by watertight bulkheads. These compartments are inflated separately, about one minute being required for each. There are two seats or thwarts 12 inches wide and 24 inches long. With two passengers aboard the draft is about two inches, and practically the same trim is maintained with only one aboard because of the buoyancy of the inflated end member. The bias fabric is very durable but in the event

The "Airaft" in Service

of a cut it can be repaired with a patch and rubber cement. It is practically unsinkable, the manufacturer claims, and is adaptable for duck hunting, fishing, and water sports generally as well as for a tender for seaplanes and as a life boat or extra for airplanes and submarines. When reversed it makes a good air mattress for campers.—Airships Incorporated, Hammondsport, New York.

"Woof-Woof," the Jumping Puppy

"Woof-Woof" is made of cloth, in green, blue, rose, yellow and brown, but his popularity depends as much on the extremely elastic cord attached to his back as on the mournful eyes and drooping ears. He is twelve inches tall and can jump as high as one's head or walk sedately, as the occasion requires, always landing squarely on his feet.—The Averill Manufacturing Co., 143rd street and Wales avenue, New York, N. Y.

"Woof-Woof" Without His Jumping Band

New Lambert 30 by 5 Cushion Tire

In the latest addition to its "Trublpruf" line the Lambert Tire & Rubber Co., Akron, Ohio, employs its usual construction, with round holes running clear through the body of the tire; but the new tire is wider than the 30 by 5 pneumatic now standard on the rear of one-ton Ford trucks, which it is designed to replace, and the tread design is different. The diameter of the holes is larger, also, insuring greater resiliency under heavy loads and at high speed. The final inside diameter of the rim has been reduced to conform to the smaller wheel. Two sturdy flanges rest on the wheel itself, one being extended on the outside in such a way that it takes the place of the former attached lugs. It is provided with holes for bolts.

Specially Shaped Teething Ring

The shape of the teething ring illustrated is its distinctive feature. It is made of pure rubber, soft and yielding, designed to fit the baby's mouth and to afford a good grip for the hand. It is described as "the nearest thing to a mother's finger." The

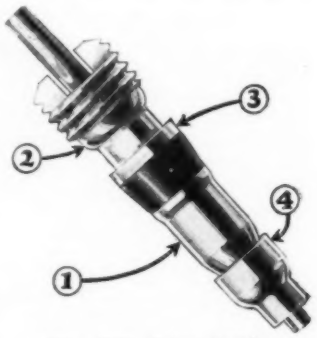
illustration shows the actual size. It is furnished to dealers in glassine envelopes to insure sterilized purity and in attractive display cartons holding two dozen.—Jorgensen Specialty Co., Erie, Pennsylvania.

Lowell Tube Tester

The Lowell Equipment Manufacturing Co., Lowell, Massachusetts, has developed a tube tester which will find leaks in tubes at the splice. Two steel rings, one slightly smaller than the other, and a specially prepared netting are employed. The tube is placed in the netting and confined tightly by means of the smaller ring being forced through the larger. Then the tube is inflated and immersed in the testing tank. The netting makes it possible to inflate the tube sufficiently so that any hole will be opened, however small. The tester can be had in all sizes from 3-inch high pressure to 7:30 balloon.

Advance Model of Valve Inside

The makers of the "Instant-On" dust and valve caps have designed a valve inside which they claim will overcome the usual causes of tire valve trouble. The delicate spring and stem are protected against jamming, bending or damage by a metal barrel which completely incloses them, as shown at 1 in the illustration. The threaded sleeve at 2 is swiveled, which prevents the large rubber gasket from turning — the common cause of worn-out gaskets and leaky valves. As a second line of defense against possible loss of air a carefully tapered metal seat is placed right above the rubber gasket at 3, making a metal-to-metal contact and effectually sealing the entire unit.



The Dill Valve Inside

At the point marked 4 is a soft rubber gasket which constitutes the valve seat, and the end of the metal sleeve, 1, which seats on it is especially hardened and burnished to prevent its sticking to the rubber gasket below.—Dill Manufacturing Co., Cleveland, Ohio.

Shoe Sole Made Like Cord Tire

Gro-Cord Work Sole

Gro-Cord soles are flexible, comfortable, skid-proof, and are constructed like a cord tire, consequently, the manufacturers claim, they give cord tire wear. These soles are made for both work and sport wear—for workmen who are really hard on shoes and likewise for the golfer, who must have a skid-proof sole and yet have comfort. The cords in all Gro-Cord soles are placed on end and this feature alone accounts for much of their wearing quality.—The Lima Cord Sole and Heel Co., Lima, Ohio.

Remington Shock Pad Tire

An improvement to the Remington tire comprises a shock pad in the form of a rubber cushion covering the entire interior of the tire. Nine points of superiority for the tire thus equipped are cited by the manufacturers, among these being the assertion that the shock pad reduces stone bruising and fabric breaking to a minimum, supplies greater carcass strength and greater flexibility, operates at low air pressure without injury, distributes all shocks over a larger area without carcass strain, reduces heat generation, and provides a sidewall that will effectually resist side blows.—The National Tire & Rubber Co., East Palestine, Ohio.

Remington Shock Pad Cord

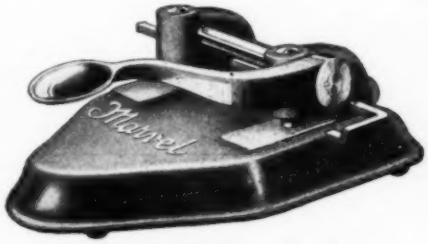
Windscreen Wiper with Rubber Squeegee

The manufacturers state that the "Mansada" windscreen wiper illustrated is proving a popular number in Great Britain. It retails at a low price with a 25 per cent discount to the trade, and is used on both single and double screens. The rubber squeegee is slightly pneumatic and keeps tight on the glass, giving a clear sweep across the glass and cleaning outside and inside at the same time. —Mansell & Adams, Ltd., 81 Farringdon street, London, E. C. 4.

"Mansada" Windscreen Wiper

Improved "Marvel" Paper Punch Has Rubber Feet

The Delmar Manufacturing Co., Cincinnati, Ohio, is offering to the trade an improved Marvel punch, shown herewith. This punch is considerably heavier and stronger throughout than the punch of the same name which has been on the market for a number of years. The base is cast metal; the handle on which the strain falls is of malleable steel and is therefore practically unbreakable. This punch is equipped with a gage which is marked in such a manner that sheets can be easily and quickly centered for punching. The gage also helps to hold the sheets in place while being punched. The punch is equipped with rubber feet and is finished in olive green enamel, the trimmings being nickel plated. There are several stock sizes for the punching of different diameters of round holes and also a punch for slit holes.



New "Marvel" Paper Punch

The Roller Bearing Cushion Tire

A cushion tire designed by B. C. Swinehart to increase resiliency and riding qualities and at the same time furnish ample carrying capacity to take care of overloads employs solid rubber rollers which rest inside of holes running clear through the tire. Under normal loads the rollers do not function, as the supporting rubber walls between the holes are made the right size to balance the load and furnish a cushion. Under an overload, however, the tread of the tire at the top of the hole rests on the rubber roller, and this arrests the depression and prevents the collapse of the tire. It is claimed that this type of tire has stood up perfectly for months under severe overload conditions and has been satisfactorily tested on Ford trucks carrying 5,500 pounds.—Roller Bearing Cushion Tire Co., Everett Building, Akron, Ohio.

The Swinehart Roller Bearing Tire

North Eastern Straightside Flap

The North Eastern Rubber Co., Elizabeth, New Jersey, is manufacturing a new straightside flap of rubber reinforced with a specially woven fabric which adds tensile strength without perceptibly decreasing the stretch and which fits like a glove over the rim. The rubber surface insures against rust from moisture and the toughness of the fabric eliminates the danger of damage from the tire iron in mounting or removing the tire.

Rubber Grip for Tennis Rackets

A "Correct Grip" for the tennis racket is the latest development of the manufacturers of the "Correct Golf Grip"and is made along the same lines. It is all-rubber, molded in one piece, the grip portion being finely corrugated with criss-cross lines which prevent slipping of the hand even when the rubber or hand is damp. A heavier smooth portion finishes it at the tip. As in the golf grip, it fits close to the shaft and requires no whipping.—Armstrong Golf Grip Corporation, 1222 North Charles street, Baltimore, Maryland.

"All-Rubber" Tennis Grip

Rubber and Fiber Rugs

The Textile Rubber Co., Mystic, Connecticut, is manufacturing a line of rugs and floor coverings under the trade name "Santex." These are made of pure rubber, throughout which interlocked textile fibers are evenly incorporated. The finished product has the appearance of a soft napped surface and feels like fine felt. The rugs are finished on both sides, making them reversible, and are waterproof, dustproof, and non-skid, whether wet or dry.

"The Aquaplane" Floats on Rubber Balls

An English manufacturer has combined the idea of a pleasure raft and a safety device in what he has termed the "Aquaplane." It will carry comfortably two or even three persons and may be used with or without a sun canopy and be propelled by sail or paddle. The frame consists of two side bars and an end bar, with canvas strips between the sidebars for seats. The rubber ball floats, one at one end and two at the other, may be inflated by mouth or pump. There are no bolts or nuts and it is very easily assembled. Deflated and rolled up it weighs about twenty pounds.—The Bathing Yacht Manufacturing Co., Ltd., 10-11 Jermyn street, London, S.W.1, England.

The "Aquaplane" With Sail Attached

The Obituary Record

Internationally Known Rubber Expert

William E. Roberts, plant superintendent of the Hodgman Rubber Co., and a director of the Paramount Rubber Consolidated, Inc., both of Tuckahoe, New York, died on March 24, 1925.

Mr. Roberts was born in Pekin, Illinois, December 11, 1885, and educated in the public schools of Omaha, Nebraska. When seventeen years of age he began giving exhibitions of balloon ascension and parachute jumping, and later, in 1912, took up flying airplanes at Mineola, Long Island. For several years he flew both monoplanes and biplanes.

W. E. Roberts

In 1917 he started with his brother, Fred T. Roberts, to develop rubber inventions. Of them one of the most important is the present type of tennis ball now in general use throughout the world. He went to the Canadian Consolidated Rubber Co., Limited, Montreal, Canada, where he installed the vacuum method of making play balls, bulb and plumbers' valve balls, then to the H. O. Canfield Co., Bridgeport, Connecticut, the Tyer Rubber Co., Andover, Massachusetts, and the Seamless Rubber Co., New Haven, Connecticut.

Through this installation work he gained a wide knowledge in many rubber plants in America and also abroad. He installed the vacuum method in the factory of J. Lick & Co., Paris, France, and elsewhere in Italy, Germany and England. He was well known to Pirelli Co., Milan, Italy, the Continental Rubber Co., Hanover, Germany, also to Spencer, Moulton & Co., Ltd., and David Moseley & Sons, Ltd., in England.

He was superintendent of the Paramount Rubber Consolidated, Inc., Little Falls, New Jersey, until that company was merged with the Hodgman Rubber Co., when he became superintendent for the latter firm. He continued as a director of the Paramount Rubber Consolidated, Inc., which is now a holding company owning all the Roberts inventions, under which patents several rubber companies, including the Hodgman Rubber Co., operate on license agreement. He was also a director of the Paramount International Rubber Co., which owns and operates the Roberts inventions in all foreign countries.

Interesting Letters from Our Readers

Accuracy of Test Gages

TO THE EDITOR:

DEAR SIR: In the article "Comparison of Bursting Test and Grab Test for Knit Goods," that appeared in your May issue, B. H. Foster refers to the diaphragm error and its correction.

I agree with the author's conclusion in regard to this important source of error and the necessity of correcting the gage reading at bursting by the amount of pressure exerted to raise the diaphragm to height where it ruptured the fabric under test.

In using the Mullen tester or the Cady electric tester the pounds per square inch bursting pressure is not shown on the gage.

The ideal size opening for making tests is a clamp opening the equivalent to 10 square inches, namely, about 3½ inches in diameter. This would allow using a lower reading pressure gage the indications of which when multiplied by 10 would give square inch bursting pressures.

Owing to the general lack of accuracy in pressure gages we are developing a dead weight gage from which one can get accurate indications under all conditions.

Chicago, Illinois, May 8, 1925 E. J. CADY & CO.

Putnam Balloon Tire Patent Questioned

B. G. Work, president of The B. F. Goodrich Co., Akron, Ohio, when interviewed concerning the Putnam patent purporting to cover the balloon tire idea, stated that in his opinion the patent office did not have properly brought to its attention the history of the cord tire. The low pressure tire, he said, had its genesis in this country in the manufacture of the Silvertown tire. This original Silvertown was featured by a carcass of two-ply cable cord construction, and the idea was brought over from England, where the same tire had been made and sold for several years under the name of "Palmer Tyres."

Mr. Work said:

I have before me a catalog published by The Palmer Tyre Ltd., which has been in our possession for about fifteen years. This catalog says: "The use of tyres of large diameter for increased comfort and durability has now become an accepted motoring maxim. On the score of comfort alone large tyres are much preferable to smaller ones. It is the combination of 6-inch or 7-inch Palmer tyres and the low pressures at which they can be inflated that so absorbs shocks and insures comfortable riding and lessened fatigue on long journeys. The larger the cord tyre the lower the pressure at which it can be run. . . . On pages 23 and 25 are shown groups of cars fitted with 7-inch Palmer cord tyres." There is much more in this catalog to the same effect, and some of the published testimonials and press notices dated in 1909 and 1910 afford a striking parallel with the claims of advantage during the past three years. I think, therefore, that the appearance of this patent will cause more astonishment to our English cousins when they learn of it.

A set of these 7-inch low-pressure Palmer tires was brought to the United States in 1910 and driven on a car owned by a former official of the Diamond Rubber Co. The man who applied them is still in our employ. It is true that the balloon tire idea did not gain great headway in this country at first, although there were thousands of low-pressure, thin-walled pneumatic tires made for airplanes during the war. The wheel company with which Mr. Putnam is connected is entitled to considerable credit for its part in focusing the attention of the industry and tire users upon the advantages of the balloon tire idea, but I do not feel that it can justly be regarded as a new idea capable of protection by a valid patent.

The original low-pressure tires, Mr. Work pointed out, had all the basic characteristics and virtues of the balloon tires of today. This being the case, a patent could not have been issued to Mr. Putnam with a full knowledge of the facts.

Officials of the General Tire & Rubber Co., Akron, Ohio, state that this company was manufacturing balloon tires before the Putnam application was granted. They regard the balloon tire not as the idea of one man but as a general development of the whole industry.

J. A. Swinehart, organizer of the Swinehart Tire & Rubber Co. and himself an inventor, said he did not believe the Putnam patent would stand a court test.

The idea of making a pneumatic tire larger, with fewer plies and designed to stand up inflated with less air pressure, is not patentable, he stated. It was used in this country several years before Putnam applied for his patent, August 13, 1920. As well take out a patent for short skirts for women, simply because they are popular and their popularity proves they are more than merely a development in the art of dressmaking, he added.

INCREASE IN AMERICAN EXPORTS OF RUBBER TOYS

During the first three months of the present year United States exports of toys and games, at a total of $702,447, represented a gain in value of 19 per cent as compared with the corresponding quarter of 1924. This increase was due entirely to shipments of rubber toys which, with a value of $318,028, gained 62 per cent for the 1925 period. All other types of toys decreased.

DURING MARCH AND APRIL OF THE PRESENT YEAR JAPAN'S exports of rubber tires were valued at 300,000 yen and 500,000 yen respectively. Yen averaged $0.4097 in March and $0.4176 in April.

News of the American Rubber Trade

Rubber Industry Outlook

THE automobile industry which affords the basis for tire production, has been operating at record rate of production the past quarter, that for May bidding fair to exceed that for April. These conditions have stimulated capacity production of tires and tubes. The large tire companies have maintained output of tires and tubes on full schedules for some months past and plan to operate at that rate for the next 60 days, at least. This means that the seasonal summer slackening of tire output will be postponed at least a month or more and therefore will be of correspondingly shorter duration.

The sudden and strong advance in crude rubber gives rise to the general expectation that tire prices may again be increased 5 to 15 per cent between June 1 and July 15. The largest increase will probably be in balloon tires and 30 by 3½ cord and fabric tires which were not included in the revision May 1.

Comparison of the output of rubber goods manufactured so far this year with that of the corresponding period of last year is afforded by the fact that for the first five months of this year the industry has taken 25 to 30 per cent greater tonnage of compounding supplies than in the same months of last year. This fact will be most strongly reflected in the ultimate records of tire output, which represents 75 to 80 per cent of manufactured rubber goods.

The popularity of the balloon tire will make it ultimately the prevailing type. It has been pointed out by one tire authority that since there are several million cars now on the road equipped to take only clincher tires the square woven fabric tire will not be eliminated before another 5 or 6 years.

Continued high prices for crude rubber have stimulated the use of reclaimed rubber, which in its best grades can be most advantageously used because of its standardized quality, technical characteristics and low volume cost.

Manufacturers in the important branches of footwear, mechanicals, insulation, hard rubber, etc., are scarcely less inconvenienced than tire manufacturers by the extremely high prices demanded for crude rubber. These lines are operating on a fair volume of orders under strongly competitive conditions. The usual seasonal decline is approaching or has already arrived in footwear and sundries, although specialties in these lines are active.

The high cost and the shortage of crude rubber that the industry is facing will no doubt result in advanced prices for all rubber products.

Financial

Akron Rubber Stock Quotations

Quotations of May 21, supplied by Otis & Co., Cleveland, Ohio.

	Last Sale	Bid	Asked
Faultless com.	28	27	30
Firestone com.	116	114	118
Firestone 1st pfd.	98½	98⅝	99
Firestone 2nd pfd.	97¼	97	98
General com.	240	...	240
General pfd.	101	101⅛	...
Goodrich com.	53	...	...
Goodrich pfd.	95	...	...
Goodyear com. V. T. C.	30⅞	30	30½
Goodyear pfd. V. T. C.	96¼	...	...
Goodyear pr. pfd. V. T. C.	104¼	...	...
Miller com.	125¾	...	125
Miller pfd.	102¼	102½	...
Star com.	20	17	25
Star pfd.	30	...	...
Swinehart com.	10	...	20
Victor com.	⅞	¾	1
Victor pfd.	...	...	...

New York Stock Exchange Quotations

May 20, 1925.

	High	Low	Last
Ajax Rubber, com.	13⅞	13⅝	13⅝
Fisk Rubber, com.	16¾	16	16⅜
Fisk Rubber, 1st pfd. (4)	94	94	94
Goodrich, B. F., Co., com.	53⅜	52¾	53
Goodyear Tire & Rubber, pfd. (7)	97⅞	97¼	97¾
Goodyear Tire & Rubber, pr. pfd. (8)	104	104	104
Kelly-Springfield Tire, com.	18½	18	18⅜
Keystone Tire & Rubber, com.	2⅝	2⅛	2⅛
Lee Rubber & Tire, com.	13¾	13¾	13¾
United States Rubber, com.	46⅞	45¾	45¾
United States Rubber, 1st pfd. (8)	99¾	98¾	98¾

Dividends Declared

Company	Stock	Rate	Payable	Stock of Record
Boston Woven Hose & Rubber Co.	Pfd.	$3.00	June 15	June 1
Boston Woven Hose & Rubber Co.	Com.	$1.50	June 15	June 1
Converse Rubber Shoe Co.	Pfd.	3½% s.a.	June 1	May 15
Firestone Tire & Rubber Co.	7% Pfd.	1¾% q.	May 15	May 1
Goodrich, B. F., Co.	Pfd.	$1.75 q.	July 1	June 16
Goodyear Tire & Rubber Co.	Pr. Pfd.	$2.00 q.	July 1	June 20
Hood Rubber Products Co.	Pfd.	$1.75 q.	June 1	May 20
India Tire & Rubber Co.	8% a.	.....	May 20	.....
Miller Rubber Co.	Pfd.	2% q.	June 1	May 10

Fisk Earnings Show Increase Over Last Year

The Fisk Rubber Co.'s net sales for six months ended April 30, 1925, are estimated at $29,675,000, with operating profits after depreciation but before interest and Federal taxes of $2,800,000, from which is deducted interest and other charges of $525,000 and provision for current Federal taxes of $290,000, leaving net earnings of $1,985,000. This compared with the same period last year with net sales of $23,200,000 shows an increase of approximately 28 per cent and net earnings of $755,000, an increase of approximately 160 per cent.

Net sales for the month of April this year show an increase of over 40 per cent and net earnings an increase of over 100 per cent compared with the same month last year.

Production of automobile casings and tubes for the six months ended April 30, 1925, shows an increase of approximately 33⅓ per cent over the same period last year, and to meet the demand for Fisk products their plants are now producing 26,000 automobile casings and 32,000 automobile tubes daily against 18,000 automobile casings and tubes at this time last year.

Fisk is one of the rubber companies that anticipated their 1925 rubber requirements, and commitments for forward delivery are at prices considerably below the market.

Faultless Rubber Co.

A recent offering of about 10,000 shares of no par value common stock of the Faultless Rubber Co., Ashland, Ohio, at $25 a share, has been over-subscribed, it is announced by officials. The stock after being listed on the Cleveland exchange, sold $3 above the offering price. The company manufactures a diversified line of rubber goods, including druggists' sundries, toys, balloons and sponges. It specializes in contract work for special products. Organized in 1903 in Akron, the concern moved to Ashland in 1907. Dividends have been paid since 1910, and assets have grown from $325,000 in that year to $2,300,000.

The Lee Tire & Rubber Co.

Sales during the first quarter of 1925 by the Lee Tire & Rubber Co., 33 West 60th street, New York, N. Y., totaled $2,475,217.46, the company also reporting a surplus of $1,956,897.14, and a profit of $5,374.76, as compared with a deficit of $112,000 for the corresponding first three months of 1924. Sales of solid tires during the 1925 period are especially noteworthy, these representing an increase of 136 per cent over the first quarter of 1924.

Ames-Holden Tire & Rubber Co.

Ames-Holden Tire & Rubber Co. of Canada, Kitchener, Ont., reports for December 31, 1924, current assets of $495,306 and total current liabilities of $135,278, leaving net working capital $360,028, against $258,906 at the end of 1923.

New Incorporations

Adma Moulding & Rubber Co., Inc., May 13 (New York), $50,000. Incorporators: J. L. Gold, Jos. Fried, Ann Weisbach, all of 47 West 34th street, New York City. Principal office, Manhattan. To manufacture dolls, etc.

The Celastic Corporation, April 27 (Delaware), $1,000,000, par value, $100. Incorporators: C. M. Spargo, J. H. Cassidy, F. R. Squair and Chas. Copeland, No. 7 West 10th street, all of Wilmington, Delaware. Principal office, Wilmington, Delaware. To manufacture and deal in colloid treated fabrics.

E. & F. Tire Company, Inc., May 12 (New York), $5,000. Incorporators: M. Vetter, 290 Grant avenue, Cypress Hills, E. Vetter and F. Vetter, both of 9237 77th street, Woodhaven, all in State of New York. Principal office, Brooklyn, New York. To manufacture automobile tires, etc.

The Edmester Rubber Co., April 18 (Massachusetts), $10,000. Officers: Benjamin Thomas, Arlington, Massachusetts, president; Harry M. Belcher, 204 Church street, New York City, vice-president; Harry M. Ripley, Jr., Malden, Massachusetts, treasurer; Ralph T. Eastman, Watertown, Massachusetts, assistant treasurer. Incorporators: Wm. W. Duncan, Watertown, Arthur B. Newhall, Belmont, Benjamin Thomas, Arlington, and Harold C. Haskell, Brookline, all in State of Massachusetts. Principal office, Watertown, Massachusetts. To deal in footwear, clothing, tires, tubes and accessories.

Gilchrest, Inc., May 12 (New York), $25,000. Incorporators: A. M. Gilchrest, 347 McClellan street, Schenectady, H. S. Potter, Burnt Hills, and Chas. Heritage, Ballston Spa, all in State of New York. Principal office, Schenectady, New York. To deal in automobile tires.

Greater New York Tire Distributors, Inc., April 21 (New York), $10,000. Incorporators: Morris Hotchner, 80 Maiden Lane, New York City, L. A. Silberbauer and R. S. MacDevitt, both of 133 Broadway, Flushing, New York. Principal office, Queens Borough, New York. To deal in tires.

Thomas Hardman, Inc., May 6 (New York), $16,000. Incorporators: Leslie B. Empey and Lila R. Empey, both of 70 Maple street, Troy, and Thos. Hardman, 928 State street, Schenectady, all in State of New York. Principal office, Schenectady, New York. To deal in automobile tires and accessories.

Karalan, Inc., May 7 (New York), 100 shares, no par value. Incorporators: L. V. Festger, 203 West 66th street, New York City, Edna Himmelweit, 245 Ft. Washington avenue, New York City, and V. L. Cardno, 3743 92nd street, Elmhurst, Long Island, all in State of New York. Principal office, Manhattan. To manufacture rubber goods.

The Textile Rubber Co., Inc., February 13 (Connecticut), $40,000. Officers: J. R. Sanford, president, J. R. Wheeler, vice-president, Chas. E. Wheeler, treasurer, N. C. Wheeler, secretary, Sam M. Sanford, assistant secretary, all of Mystic, Connecticut. Incorporators: same as officers. Principal office, Mystic, Connecticut. To manufacture rubber tile flooring and rugs.

The Tubeless Pneumatic Tire Corporation, May 1 (Delaware), $1,000,000, par value $25. Incorporators: Cornelius A. Cole, Hackensack, New Jersey; Robert A. Van Voorhis, 168 Harrison avenue, Jersey City, New Jersey; and Wm. E. Shields, Jr., Clifton, Staten Island, New York. Principal office, 100 West 10th street, Wilmington, Delaware, with Registrar and Transfer Company. To manufacture and deal in tires.

The United Lesther & Rubber Corporation, March 26 (Massachusetts), $250,000. Incorporators: Oliver P. Hussey, 3 Hall avenue, Nashua, New Hampshire; Ezra C. Hartford, 5 Concord avenue, Cambridge, Massachusetts; Leroy A. Prull, 88 Draper street, Dorchester, Massachusetts; and George E. Jeandheur, 25 Cabot street, Winchester, Massachusetts. Principal office, 10 High street, Boston, Massachusetts. To manufacture and deal in rubber and leather goods and manufacture as exclusive licensee in the United States under the Leon Conant Process Product and Equipment Patent specifications on soles and heels.

Vulrubco, Inc., May 14 (New York), $5,000. Incorporators: Abr. Cohen and I. Cohen, both of 1211 Wheeler avenue, Bronx, and H. Lehrer, 1048 Bryant avenue, Bronx, all of New York City. Principal office, 63 East 8th street, New York City. To manufacture and deal in mechanical rubber goods, rubber bands, mats and matting.

Walker & Wilson, Inc., April 24 (New York), 100 shares, no par value. Incorporators: R. F. Allen, 400 Elmwood avenue, M. G. Owens, 183 Wallace avenue, and C. C. Jewett, 77 Bryant avenue, all of Buffalo, New York. Principal office, Manhattan. To deal in automobile tires.

Paul E. Wirt Fountain Pen Co., May 11 (Delaware), $25,000 preferred, par value $100 and 1,000 shares, no par value. Incorporators: T. L. Croteau, A. L. Miller, F. R. Bogart, all of Wilmington, Delaware. Principal office, duPont Building, Wilmington, Delaware, with Corporation Trust Company of America. To manufacture and deal in fountain pens, writing devices and other merchandise.

The Rubber Trade in the East and South

Factories producing tires and inner tubes are turning out these goods to their full capacity due to the fact that neither manufacturers nor dealers carried over stocks adequate to meet the spring demand of automobile manufacturers and motorists. The fact that automobile sales of April and May are of record proportions has also profited makers of automobile topping. The imperative demand for these goods in some instances required day and night operation by the topping mills to secure adequate volume of production.

Footwear plants are operating on less than a full week basis and that on reduced schedules except on such specialties as tennis and sport shoes and bathing slippers. Druggists' sundries factories are also entering the annual period of seasonal slackness apparently inevitable in their lines. Insulating wire capacity has recently been increased. There is much business available at increasingly competitive rates.

Capacity for heel production was much overdone even before the large manufacturers of leather shoes equipped plants for making their own heels. So large a percentage of the heel requirements having thus been provided for outside the rubber industry proper, large manufacturers of heels are compelled to curtail output and the small companies are seriously handicapped by the keen competition that results.

In general mechanical rubber goods lines, hose, belting, packing, molded articles and specialties output is being maintained on fairly full schedules. Price advances in mechanicals are expected June 1.

Joseph A. McNulty, 114 Liberty street, New York, N. Y., importer of red oxide, is on his way to England to visit his principals, Leach, Neal & Co. His plans include a tour through Belgium and France.

Jenkins Brothers, 80 White street, New York, N. Y., manufacturers of valves and mechanical rubber goods, have purchased outright the corporation known for many years as the H. A. Rogers Co., 87 Walker street, New York, N. Y., dealer in railway, mill, mining and contractors' supplies. The Jenkins company will continue to carry some of the goods in which the Rogers organization has specialized. Executives of the first-mentioned concern include: Farnham Yardley, president; Frank T. Swain, vice-president; C. V. Barrington, vice-president; W. Byron Rufe, secretary; and A. Eugene Brady, treasurer.

A. P. Cobb, vice-president of The New Jersey Zinc Co., 160 Front street, New York, N. Y., was elected president of The American Zinc Institute at the organization's annual meeting during April, in St. Louis. Mr. Cobb has been identified with the Institute since its formation, having previous to the recent election held the position of vice-president and chairman of the executive committee.

The Roessler & Hasslacher Chemical Co., manufacturing and importing chemists, 709-717 Sixth avenue, New York, N. Y., now capitalized at $6,000,000, represents a consolidation of the interests of the original company and the Niagara Electro Chemical Co., the latter organization having formerly been a subsidiary.

M. Rothschild, crude rubber broker, who for nine years has maintained offices at 25 Beaver street, is now located at 66 Broad street, New York, N. Y. Elliot H. Simpson, a member of the Rothschild organization, is now in Singapore, investigating rubber conditions there.

On May 1 Thompson-Weinman & Co., Inc., dealers in rubber chemicals, moved to new offices at 52 Vanderbilt avenue, New York, N. Y.

The Philadelphia Rubber Works Co., Inc., 52 Vanderbilt avenue, New York, N. Y., specializing in reclaimed rubber, is increasing its facilities by extensions to its plant at Akron, Ohio, as well as the construction of a new office building. J. S. Lowman is first vice-president.

By the middle of June enough equipment will have been installed in one of the large units of the Dunlop Tire & Rubber Co., Buffalo, New York, to raise the plant production of passenger car casings an additional 4,000 a day. The present equipment provides for a daily output of 6,000 such casings. The new shop, measuring 562 by 120 feet, is only one of the 18 similar units at the Dunlop works. An additional 4,000 tubes will also be produced daily, while the company's cotton mill, at Utica, New York, is now for the first time working with a night and day shift. The Dunlop plant has been designed for a maximum daily output of 24,000 casings and tubes.

The Textile Rubber Co., Mystic, Connecticut, has been recently incorporated and capitalized at $40,000. Operations have been begun in a factory building owned by the Standard Machinery Co., a manufacturer of special machinery, some of it for the rubber industry. The Textile company is now producing "SanTex" tile flooring and rugs, the material representing an incorporation of textile fabric with rubber by means of a special process. Officers of the organization include: Joseph R. Sanford, president; John R. Wheeler, vice-president; Charles E. Wheeler, treasurer; Norton C. Wheeler, secretary; and Samuel M. Sanford, assistant secretary. Joseph R. Sanford has been the inventor of a number of processes now being used in the rubber industry.

The Swinehart Rubber Co., 46 Allyn street, Hartford, Connecticut, a distributer of Swinehart tires, has been reorganized and the following executives chosen: Harry W. Bigelow, president and treasurer; Fred B. McClunie, vice-president and sales manager; George B. Kinsler, secretary.

The month of May has brought but little change in the industrial situation among the rubber manufacturing plants of Rhode Island. All the plants are operating cautiously and with as near full time as possible. The producers of novelties keep fairly busy, as do the tire concerns, but the shoe wear firms have hard time keeping the working schedule intact notwithstanding that for months a curtailed time card has been in effect. The National India Rubber Co., Bristol, Rhode Island, has been a slight exception because of a rush order of considerable size that necessitated the placing on of a larger force and an extension of hours. This splurge, however, is nearing a finish and notices have been posted that the overtime run will be discontinued about the middle of June.

Considerable interest is being manifested in the coming seventeenth semi-annual convention of the American Institute of Chemical Engineers that is to be held in Providence, Rhode Island, June 23 to 27, at the Biltmore hotel. Visits to commercial and industrial plants and the staging of an immense exhibition by the Chemical Manufacturers Association in the State Armory is planned. One of the features of the convention will be a visit to the plant of the Revere Rubber Co., one of the subsidiary plants of the United States Rubber Co., where the production of mechanical rubber goods, rubber thread, golf balls, bathing caps and aprons of colored rubber, dipped rubber goods, hard rubber goods and other specialties manufactured at this plant will be explained.

At the Carolina Mill in Carolina, Rhode Island, business has been very brisk in the production of a specially prepared automobile lining for tops and several car loads are weekly shipped to the Ford Co., at Detroit, Michigan, which has the entire output of this concern.

The Board of Fire Engineers of Bristol, Rhode Island, has recently awarded contracts to the following for equipment for the fire department: United States Rubber Co., 1,200 feet of fire hose; Republic Rubber Co., Youngstown, Ohio, 700 feet of fire hose; Combination Ladder Co., Providence, Rhode Island, twenty rubber coats.

The Providence Insulated Wire Co., Providence, Rhode Island, has commenced the erection of a one-story brick addition to its plant on Wadsworth street, which will be 125 feet in length and 63 in width. The new building will be used for manufacturing purposes and will be equipped with modern appliances.

A warehouse building at Fifth and Locust streets, Philadelphia, Pennsylvania, has been leased for branch purposes by the United States Rubber Co., 1790 Broadway, New York, N. Y.

A steady increase in business is reported by the Continental Rubber Works, Erie, Pennsylvania, the company specializing in "Vitalic" rubber products. Additional floor space has been secured by the enlargement of two of the buildings, while the power plant equipment has been improved. Executives of the organization include: Theron R. Palmer, president and general manager; Alexander Jarecki, vice-president; Albert E. Caldwell, secretary; Charles S. Colemand, treasurer; and Herman M. Reinecke, assistant treasurer.

The Union Rubber Co., Zelienople, Pennsylvania, has been completely reorganized, and the following executive personnel appointed: J. T. Budinger, general manager; N. W. Brownfield, business manager; and J. W. Moore, superintendent. The company reports that since the resumption of operations under new management conditions have greatly improved, the plant output now being 500 tires daily.

On May 1 the Paul E. Wirt Fountain Pen Co., Bloomsburg, Pennsylvania, sold its entire plant to a corporation which will reenter the market with a line of high grade pens. The facilities of the present factory will be increased, and the production of the Wirt pen, with its distinctive features, will be continued.

An increase in production is being planned by The Cord Tire Corporation, Chester, West Virginia, where the present output of inner tubes, at more than 1,500 a day, represents an advance over the 1924 figures of practically 150 per cent. The April schedule of 750 tires a day is also below demands, while the output of balloon casings is being steadily maintained. C. H. Purviance is advertising manager.

Business at the stock warehouses maintained at Charlotte, North Carolina, and Memphis, Tennessee, by the Hood Rubber Products Co., Inc., Watertown, Massachusetts, has grown to such an extent that the organization has installed branches at these points instead of the former stock depots. W. W. Duncan is manager of distribution.

Changes in U. S. Rubber Executive Personnel

George H. Mayo, formerly head of the sales department of the general division, has resigned these duties, but will remain with the organization as second vice-president.

Herbert E. Smith, formerly general manager of the export department, is now general sales manager of the general division of the company.

In addition to the office of comptroller, William O. Cutter was elected vice-president of the company at a recent meeting of the organization.

The Rubber Trade in New Jersey

The monthly meeting of the Rubber Manufacturers' Association of New Jersey scheduled for May was postponed because of the annual golf tournament held at the Trenton Country Club by many of the Trenton rubber manufacturers, which lasted a week. Those who participated included A. Boyd Cornell, secretary and treasurer of the Hamilton Rubber Manufacturing Co.; J. Cornell Murray, treasurer of the Crescent Insulated Wire & Cable Co., and John R. Lambert, of the Acme Rubber Manufacturing Co. A number of other prominent rubber men were daily spectators at the tournament.

The recent advance in crude rubber is expected to stimulate the tire trade to make another price increase. One of the largest tire manufacturers in Trenton announced another advance in prices of both tires and tubes, effective May 15. Some dealers are laying in a supply of tires before the prices continue to go up, while others say they will wait to see what the effect will be later. One tire manufacturer said that his concern had plenty of crude rubber on hand and that no more raw material would be purchased until the market took a drop. Manufacturers of mechanical goods also feel the effect of high cost of crude rubber. There has been a curtailment in production of tires at the majority of Trenton plants, but the mechanical line is holding its own.

The Murray Rubber Co., Trenton, New Jersey, announces that the new Murray cord tires and Empire balloon casings will be

placed upon the market soon. The Murray balloon tire for 20, 21 and 22-inch rims has been redesigned and now has a heavy raised flat tread, which insures uniform wear. The Murray company continues to operate 24 hours a day, while the mechanical goods department is running about 80 per cent capacity. The concern announces another increase in tires, effective May 15.

The Globe Rubber Tire Manufacturing Co., Trenton, New Jersey, reports business as slackening up considerably, the concern being compelled to cut down on its output of both tires and tubes.

Israel Richmond, proprietor of Richmond's Tire Shop, Trenton, N. J., has been appointed distributer for Sterling tires and tubes in Trenton and vicinity.

While business at the plant of the United & Globe Rubber Co., Trenton, New Jersey, has dropped off a little the concern reports running at normal capacity.

The Joseph Stokes Rubber Co., Trenton, New Jersey, is experiencing a dull season at the present time and orders have dropped off in some departments.

When the plant, stock and equipment of the Bergougnan Rubber Co., Trenton, New Jersey, was put up for sale a few weeks ago, no bids were received and Charles E. Stokes, the receiver, announced that another attempt would be made to dispose of the factory shortly. The federal court has advised the receiver that not less than $250,000 would be accepted for the plant and equipment.

N. S. Conover of the Murray Rubber Co. and Lloyd A. Case of the Essex Rubber Co. have been elected vice-president and secretary, respectively, of the Trenton Association of Credit Men, a newly organized branch of the National Association of Credit Men. Fred V. Bechtel of the American Oil and Supply Co. was chosen as one of the directors.

C. Edward Murray, Jr., president of the Murray Rubber Co., Trenton, N. J., recently made a business trip to Chicago in the interests of his concern.

Philip Papier, proprietor of Papier's Auto Supply Co., will shortly remove his place of business from 105 East Hanover street to 25 East Hanover street, Trenton, New Jersey. Mr. Papier handles Michelin tires and tubes.

Harry Shomo and Charles Paxson, both of Philadelphia, Pennsylvania, have been added to the board of directors of the Fisk Flap Rubber Tube Co., Camden, New Jersey, of which Paul H. Wendel, Trenton, New Jersey, is president.

Walter E. Sanders of the Essex Rubber Co. was elected president of the Engineers' Club of Trenton, New Jersey.

Judge Bodine in the United States District Court has confirmed the sale of the Spartan Rubber Co., Yardville, New Jersey, to Michael Gilinsky, Milton Mirken, A. Rosenthal, and H. A. Rosenthal, for $40,250.

A possible dividend of about 30 per cent of their claims is indicated for the general creditors of the insolvent Howe Rubber Corporation, New Brunswick, New Jersey. The receivers' report shows receipts of $242,600.34; administration expenses, $42,734.13, and a cash balance of $199,866.21. Approved claims amount to $606,197.81.

William E. Crowley, superintendent of the Lambertville Rubber Co., Lambertville, New Jersey, recently visited the various branches of the Goodyear Rubber Co. in St. Louis, Chicago, and other places in the West. He also visited the plant of the Servus Rubber Co., Rock Island, Illinois.

H. W. Soul, for the past twelve years connected with the Miller organization as New York branch manager, has recently, as special factory representative, joined the sales forces of the Braender Rubber & Tire Co., Rutherford, New Jersey.

The Dickinson Cord Tire Corporation has removed its offices from 220 West 19th street, New York, N. Y., to its recently purchased plant in Nutley, New Jersey. F. S. Dickinson is president.

The Lambertville Rubber Co., Lambertville, New Jersey, is now being operated on a flat five-day week, the factory being closed on Saturdays. The company announces that the new working hours schedule is not a signal of declining business but the normal condition in this industry at this time of the year.

The Manhattan Rubber Manufacturing Co.

The development of The Manhattan Rubber Manufacturing Co., Passaic, New Jersey, specializing in mechanical rubber goods, has been confined almost entirely to growth out of the company's earnings, and at present no bonds or preferred stocks are outstanding. The organization's properties, valued in 1923 at $100,000, now have a depreciated book value of $4,914,274.95. For a period of 16 years the company has maintained an unusually good dividend record.

Expansion Program of John E. Thropp's Sons, Inc.

The business founded in 1878 by the late John E. Thropp was originally carried forward on a small scale at Lewis street, Trenton, New Jersey, the organization gradually developing, however, until on August 17, 1894, the four sons of the founder were taken into the business and the name of the concern was changed to John E. Thropp and Sons Co. On the death of the father the name was altered to John E. Thropp's Sons Co. With the beginning of the present year a reorganization program was instituted, the company being incorporated on February 2 as John E. Thropp's Sons, Inc.

The new plans of operation have included the purchase outright of all the machine shop equipment at the Lewis street plant, and also the foundry in its entirety, the whole property consisting of five acres of land. The foundry contains 35,000 square feet of floor space and is equipped with thoroughly modern machinery for the production of gray iron and semi-steel castings. The pattern shop has 2,500 square feet of floor space and is equipped with electric driven pattern making tools and necessary space for storage of lumber. One pattern storage building contains 15,000 square feet of floor space, and another similar structure devoted to the company's patterns represents 5,000 square feet.

In order to provide ample room for the new machine shop building, which will measure 80 by 160 feet and will cost approximately $135,000, additional land has been recently purchased adjoining the factory property on Bloomsbury street. When this new structure has been completed and is in operation the company will be able to handle all the work under one roof, from raw materials to finished product. The office building at Bloomsbury and Mill streets is being thoroughly reconstructed, and will include private and general offices and the engineering department.

The present executives of the organization include: John E. Thropp, 3rd, president, with direct supervision of the machine end of the business; James W. Thropp, treasurer; Ralph Ryan, vice-president, with direct supervision of the foundry department; H. A. Sutterley, secretary; Harry P. Messlor, sales manager; and L. A. Moreland, chief engineer. The four last-mentioned officials have been connected with the organization for a number of years.

Self-Sealing Inner Tube

The illustration of the Brown Scientific Tube shows plainly how the rubber of the tube closes around the intruding object and follows it as it is withdrawn, effectually sealing the opening made. The self-generated heat of the contact with the road while the tire is in service vulcanizes the repair.—Self-Sealing Auto Tube Corporation, 332 Park avenue, Newark, New Jersey.

Brown Scientific Inner Tube

The Rubber Trade in Massachusetts

Generally speaking, the rubber mills of Massachusetts continue to be in active operation. Footwear plants, which have been turning out large tickets of tennis lines for the summer trade, are now operating only four or five days a week. Tire and inner tube plants are operating at full schedule with no early reduction expected.

Mechanical rubber goods plants are fairly busy with seasonal lines and such general goods as belting, hose, packing, etc. The rubber heel trade has fallen off considerably, due partly to the depression in the leather footwear industry. The same is true of molded soles, the demand now being chiefly for tan rather than black. Makers of crêpe rubber soles are very busy supplying the summer demand for this popular type of golf and tennis shoe sole.

Insulated wire and cable plants are operating on full schedule, and Massachusetts building permits are in such volume as to assure a continuation of this activity for some time. This condition has also been of material assistance to rubber flooring manufacturers.

Druggists' sundries, weatherproof clothing and rubber sundries plants are for the most part operating on part time.

The Department of Commerce announces in its summary of data collected for the biennial census of manufactures, 1923, that 55 Massachusetts concerns employing an average of 6,675 wage earners receiving wages amounting to $7,564,678 produced rubber goods, exclusive of rubber boots and shoes and tires and inner tubes, to the value of $38,253,559. This compares with 50 concerns in 1921 employing an average of 5,024 wage earners receiving wages amounting to $5,316,020 and producing rubber goods to the value of $28,786,812. In 1923 ten Massachusetts concerns employing an average of 12,528 employes receiving wages amounting to $14,650,810 produced rubber boots and shoes to the value of $56,917,929. This compares with eight concerns in 1921 employing an average of 9,347 wage earners receiving wages amounting to $8,868,857 and producing rubber boots and shoes to the value of $36,700,126.

The outlook for future business for the Panco Rubber Co., Chelsea, Massachusetts, is reported as being very promising, the organization continuing to run its factory night and day, as it has been doing for the past five years. A plant addition has been recently constructed, and enough new machinery installed to increase production approximately 75 per cent. A new fireproof brick and steel building, measuring 110 by 60 feet, has also been erected for warehouse and shipping purposes, as well as for housing the general offices. The company specializes in Panco soles, taps, and heels.

The Cambridge Rubber Co., Cambridge, Massachusetts, manufacturer of rubber and canvas footwear, rubber fabrics and clothing, and molded goods, will soon erect a five-story concrete building, measuring about 85 by 100 feet, and costing approximately $90,000. With the completion of this structure, which will be devoted to rubber and canvas footwear, the Cambridge organization will have in the five buildings of its plant a manufacturing space of about 150,000 feet.

The Quabaug Rubber Co., North Brookfield, Massachusetts, is now doing a considerable business in rubber floor tiling. John R. Rooney, formerly chemist for the Boston Woven Hose & Rubber Co., and for a time with the Boston Belting Co., is in charge of this work.

It was only about a year and a half ago that Messrs. Bierer and Davis of the technical department of the Boston Woven Hose & Rubber Co., Cambridge, Massachusetts, developed the oxygen aging test which enables this company to predict in a very accurate manner how rubber goods are going to behave and how long they are going to last. So popular has the test become in this short time that today nearly thirty rubber companies are making use of it.

Among the new business establishments in Greater Boston are Rub-Ce-Co., Inc., rubber manufacturers, 157 G street, South Boston, and the National Auto Tire Exchange, 362 Columbus avenue, Boston, Massachusetts.

Although the current depression in the leather shoe manufacturing industry is more or less general throughout the country, its psychological effects seem to be more pronounced in New England than elsewhere. The New England shoe industry is fundamentally sound, however. It has been suffering from the same economic problems that have beset the whole industry, plus a few purely local problems that are remediable if the parties to them will get together. That this will eventually be the outcome is the confident belief of manufacturers of rubber heels and soles, cements and other shoe findings who are vitally interested.

Yale tires and Aztec brake linings are now distributed in New England by the Pettingell-Andrews Co., 100 Brookline avenue, Boston, Massachusetts.

The recent appointment as treasurer of the United Shoe Machinery Corporation, Boston, Massachusetts, of Halsey E. Abbey to succeed Louis A. Coolidge, recently resigned, has given general satisfaction in trade circles. Mr. Abbey has been associated with the company since the consolidation in 1900, first as chief accountant and later as auditor.

Store-Door Delivery by the Railroad

Motor truck and tire men are about to witness with much interest an experiment in railroading, never given a trial elsewhere, which may prove of far-reaching importance in freight handling if successful, and which promises greatly increased use of trucks and tires.

Store-door delivery, which has been discussed for a long time, is finally to be instituted in New England. The Boston & Maine Railroad announces a plan of direct collection and delivery to commence about June 1 at Boston, Lowell and Lawrence with the prospect of extending it to the other cities and principal towns on the Boston & Maine system as it proves its value.

The railroad proposes to contract with existing trucking companies for this service wherever practicable rather than to engage in wasteful competition. It is to be noted that this pick-up and delivery service in the three cities named is to be entirely optional with shippers and receivers of freight.

In connection with the store-door delivery, although as a separate proposition, the Boston & Maine is considering the use of motor truck transport for less carload shipments between Boston and Lowell and Lawrence in each direction. This service will include the handling by motor truck of merchandise to and from railroad terminals at most of the intermediate points on these lines. These intermediate truck movements are expected to displace the present local freight trains. This is along the same lines that the Pennsylvania and New York Central Railroads have been developing for some time past. Both of the latter roads have found it possible to handle this extensive local freight business by motor trucks at a great saving to themselves and with a great improvement in service to shippers and receivers.

The Rubber Trade in Ohio

While the leading rubber companies in Ohio are still operating practically at capacity, the spring production peak appears to have been reached. A general slowing up in the industry usually occurs during July, but this is expected to come earlier this year on account of the shortage and high prices for crude rubber.

Some of the smaller companies which have exhausted their supplies of crude rubber are already operating on reduced schedules, and many will close down completely unless relief is afforded soon in the crude rubber situation.

As prices of tires and other finished products have not been advanced to keep pace with the fast rising rubber market, the margin of profit has been severely cut for the manufacturer. Most of the large companies, like Goodyear, United States, Goodrich,

Firestone, and Miller, still have enough rubber on hand to meet their requirements for the next three or four months, but the price of the raw material is figured in the manufacturing cost at a considerably higher figure than at the beginning of the year.

Loud protests against the Stevenson restriction act have been made by consumers, following the "squeeze" in the rubber market during May which boosted the price to 70 cents a pound, compared with 45 cents at the end of April and a low of 17 cents last summer. Present quotations are the highest in effect since April, 1918.

Brokers here attribute the shortage largely to a decrease in tapping and gathering activities on the plantations during March, following heavy rainfall in January and February, coupled with heavier buying by consumers and speculators. There was also hurried covering by traders short of rubber.

Widespread predictions have been made of another advance in tire prices by June 1, and it seems imperative that new schedules should be put into effect if the rubber companies expect to operate on a profitable basis.

The next increase will undoubtedly include balloon tires, clinchers and fabric tires, in the opinion of trade authorities. Prices on these grades of tires were not raised in the readjustment of May 1.

The comparatively low cotton market and the fact that many companies had large stocks of crude rubber in warehouses have enabled them to maintain tire prices at present cheap levels. Cotton fabric is expected to go higher, however, and heavy buying is reported by cotton brokers. Commitments are being made as far ahead as September and October.

There is little danger this year of either manufacturers or dealers becoming overstocked with tires or other finished products. Output of the factories is being shipped promptly to dealers, who in turn pass it on to the consumer without keeping large stocks on their shelves. Recent reports indicate that stocks are smaller now than in many years.

The growing popularity of the balloon tire has accelerated the demand from both motor car manufacturers and dealers. Approximately 50,000 balloon tires are now being made in the Akron district, alone. This represents about one-half the total tire output.

Next to the United States Rubber Co., the Goodyear Tire & Rubber Co. probably is in the best position regarding its crude rubber requirements. Goodyear has 20,000 acres of crude rubber plantations in Sumatra and maintains purchasing agencies in Singapore and other points in the Far East. The company contracted late last year for more than six months' of its normal rubber requirements. Goodyear obtains about 8,000 tons of rubber annually from its plantations, which is about 10 per cent of its annual consumption.

The Mansfield Tire & Rubber Co., Mansfield, Ohio, has leased the old plant of the defunct Ashland Rubber Co. at Ashland. Equipped with modern machinery, the Ashland plant has a capacity of 1,000 automobile tires and 1,500 tubes a day. About 4,500 tires a day are being manufactured at the main plant of the Mansfield company, which is reported to be enjoying a prosperous business.

Legal entanglements over patents have been cleared for both the Lambert Tire & Rubber Co. and the Swinehart Tire & Rubber Co. by the recent decision of the United States district court of appeals in the case of the Lambert company against William A. Brubaker. The Cincinnati court held that neither the Brubaker patents on tire molds nor Lambert patents were being infringed.

The Barr Rubber Products Co., Sandusky, Ohio, has enlarged its dipped goods department by the erection of an additional building, the new construction providing 2,000 more square feet of floor space. Both the dipped goods and molded goods departments are at present being run at capacity. Nelt Barr is president of the concern.

At the annual meeting of the board of directors of the Williams Foundry & Machine Co., Akron, Ohio, the appointment of the following executives was announced: J. K. Williams, president and treasurer; H. L. Williams, vice-president; F. C. Vandergrift, secretary and general manager. The above officers, with Charles B. Raymond and F. E. Holcomb, constitute the board of directors. The organization has decided to resume payment of dividends on the preferred stock at the rate of 7 per cent a year, a dividend of 1¾ per cent being voted for the first quarter of 1925.

Machinery from the dismantled plant of the Rotary Tire & Rubber Co. is now being installed at the factory of The Pharis Tire & Rubber Co., Newark, Ohio, while the latter organization has also completed some necessary railroad connections. Operations at the Pharis plant are on a three-shift basis, and approximately 2,000 tires a day are being turned out. Carl Pharis is general manager.

Sales of tires for future delivery are sufficient to keep the plant of the India Tire & Rubber Co., Akron, Ohio, operating at capacity until September. The company is experiencing difficulty in manufacturing enough tires to take care of its growing business. The factory is turning out 1,300 tires a day, nearly 75 per cent of this output being large size bus and truck tires.

Several hundred thousand dollars' worth of new machinery is being installed at the plant of the Firestone Tire & Rubber Co., Akron, Ohio. When improvements are completed, the company will manufacture about 4,000 more tires a day. The demand for balloon tires is reported to be particularly heavy, nearly 80 per cent of output being of this type.

More than 50,000 rubber belts a day are being manufactured by the Trump Rubber Co., Akron, Ohio. Tire production consists of about 350 30 by 3½ cord casings a day.

The Fidelity Rubber Co., Massillon, Ohio, has increased its production schedules from about 400 to 600 tires a day. Large demand is reported, particularly from Southern dealers.

Sales and earnings of the Goodyear Tire & Rubber Co., Akron, Ohio, during the first four months of the current year have shown a substantial increase over the same period in 1924. In some districts Goodyear sales ran as high as 60 per cent over last year. Earnings for the first six months of the year are expected to be more than $5,000,000, compared with $4,173,000 reported last year. P. W. Litchfield, vice-president and factory manager, has notified Goodyear employes that no vacations will be granted this year until after July, at least, owing to the press of work in the factory. The plant is operating at full capacity, with three eight-hour shifts.

The Mooney Rubber Co., Akron, Ohio, has just been incorporated for $10,000. It will operate as a sales and distributing company for a varied line of rubber products. Offices will be opened soon in Akron and Cleveland. P. C. Mooney is president and J. Earl Cox, secretary.

The Mohawk Rubber Co., Akron, Ohio, is completing a new $125,000 mill room factory building, which will increase the capacity of the plant about one-third. The addition is two stories high, and will house all milling operations. Mohawk is producing around 1,400 tires a day, four times the output reported in the same period last year.

Improving conditions in Europe has provided a fast growing market for American made tires, according to L. D. Brown, treasurer of The B. F. Goodrich Co., who has just returned from a trip abroad.

Samuel Broers, manager of the export department of the Firestone Tire & Rubber Co., has just returned from Europe.

W. O. Rutherford, vice-president of The B. F. Goodrich Co., and president of the Rubber Association of America, is scheduled to sail from New York June 11 to attend the convention of the International Chamber of Commerce at Brussels, June 21-27.

The Good Rubber Co., Akron, Ohio, is now carrying on operations in its recently completed plant. Some new equipment has been installed which during the summer will be still further augmented. Specializing in the production of toy balloons and rubber novelties, this company has doubled its output during this year as compared with the year previous. W. D. Good, president of the organization, has had previous connections with several well-known rubber companies and was at one time general manager of The Wooster Rubber Co.

An addition to the plant of The India Tire & Rubber Co., Akron, Ohio, which increases the factory capacity by about 30 per cent has been recently completed and is now in use. The new building forms the main entrance to the plant and in it are housed the general offices.

J. O. King has been elected president of the Falls Rubber Co., Cuyahoga Falls, Ohio, succeeding M. J. O'Donnell, who has resigned after heading the organization for the past eleven years. Other executives include: G. D. Kratz, vice-president; W. S. Campbell, general sales manager; O. C. Nelson, secretary; and W. P. Kline, treasurer. The Falls company is considering a program of expansion, and additional equipment is soon to be installed. Sales last year amounted to $3,000,000, this representing a 54 per cent increase as compared with the year previous. The present plant output includes 1,400 casings and 8,500 inner tubes a day.

A change of name is announced by The Serton Rubber Co., U. B. Annex, Dayton, Ohio, which formerly carried on business as The Regal Rubber Co. The name has been derived from the last three letters in the names of both the company's president, C. R. Keiser, and the treasurer, C. C. Marston. The organization specializes in the manufacture of rubber half soles.

The Premier Rubber Manufacturing Co., Edmund street and Michigan avenue, Dayton, Ohio, is engaged in the production of mechanical rubber goods, hard rubber and bakelite goods, and rubber heels. Business conditions are reported as satisfactory, and the company is finding it necessary to install additional equipment and various plant improvements costing approximately $15,000. At the recent election of officers Joseph F. Westendorf was chosen president; Harry Gerstner, vice-president; and John Westendorf, secretary and treasurer.

Operations at the plant of The Standard Tire Co., Willoughby, Ohio, are on a basis of twenty-four hours a day, the factory being about thirty days behind on production. Considerable new machinery is at present being installed. Sales are said to be unusually good, although naturally a little stimulated by the advance that became effective May 1. Demand during the present year represents a decided advance over the corresponding months of last year.

Firestone Tire Price Readjustment

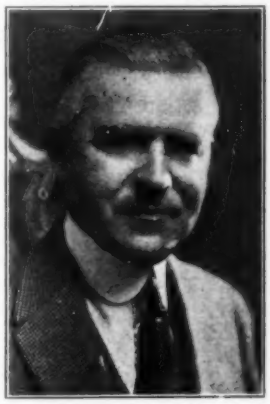
The readjustment of tire prices, effective May 1, as announced by the Firestone Tire & Rubber Co., Akron, Ohio, does not affect fabric casings, 3½-inch cords or balloon tires, but represents increases of 5 per cent on prices of regular cord tires, and a 10 per cent advance for tubes, solids, and truck and bus pneumatics.

In commenting on this readjustment program, Harvey S. Firestone, president of the Firestone organization, made extended reference to the high price of rubber on May 1, claiming that restriction measures were responsible for the situation. "Today," said Mr. Firestone, "crude rubber is 45 cents a pound, 200 per cent higher than the price prevailing just before the restriction legislation was enacted. The average price of four popular sizes of cord tires today is about $22, about 25 per cent under the price on August 1, 1922, despite the 200 per cent advance in the price of rubber." The prices of tires, and the cost of crude rubber have been considered by Mr. Firestone in his calculations following:

	30 x 3½ Cord Tire	32 x 4 Cord Tire	33 x 4½ Cord Tire	33 x 5 Cord Tire	Average Price	Rubber Price
Aug. 1, 1922..	$11.60	$27.10	$36.00	$43.75	$29.60	.15
May 1, 1923..	14.00	31.25	41.50	50.50	34.30	.37
May 1, 1925..	9.30	19.35	26.25	34.00	22.25	.45

Sales Manager American Rubber & Tire Co.

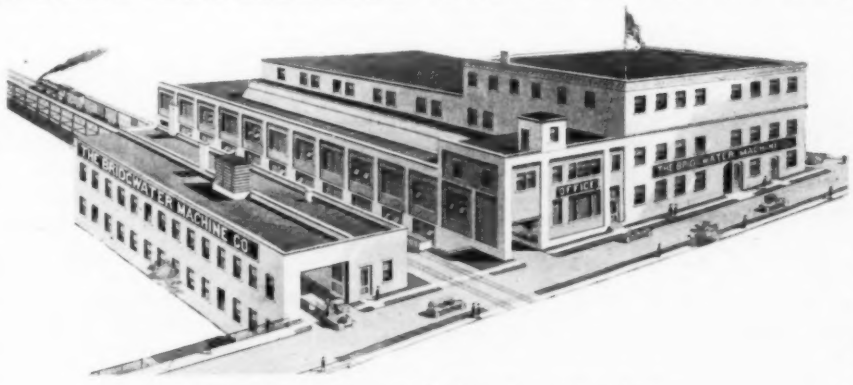
Edward L. Schmock, who a few months ago was appointed sales manager of The American Rubber & Tire Co., Akron, Ohio, in charge of both domestic and export departments, has had much experience in the rubber industry. Born forty years ago in Cleveland, Ohio, and educated in that city's schools, Mr. Schmock began his business career by becoming associated with certain railway organizations, later entering the rubber industry through his connection with the Firestone Tire & Rubber Co., where he remained for six years, employed in various capacities. Becoming division sales manager for the Miller company, Mr. Schmock also served that organization for six years, the first three years in the South and West and the second three in charge of his company's affairs in the western division, including states bordering on the Pacific Coast.



Edward L. Schmock

The Bridgwater Machine Co.

Originally known as H. H. Bridgwater & Co., The Bridgwater Machine Co., Akron, Ohio, has been carrying on business under its present title since the year 1906. The organization specializes in the production of tire molds, dies, cores, and other machinery for the rubber industry, and has recently been installing additional equipment and rearranging its non-skidding, general machine and India core building departments. Aside from the products above mentioned, the company manufactures swing joints and bead trimmers, and is also licensed manufacturer of India building cores and watch case vulcanizers. The executive personnel of the organization includes the following: H. H. Bridgewater, general manager; and F. D. Mason, general superintendent.



Plant of the Bridgwater Machine Co., Akron, Ohio

The Rubber Trade in the Midwest

The Gillette Rubber Co., Eau Claire, Wisconsin, which has been operating under the receivership of Frank C. Herman, is now being reorganized, and data concerning the new executives of the company will soon be issued. The factory is at present running twenty-four hours a day, with a production of 2,500 automobile casings, 4,600 inner tubes, and 2,500 bicycle tires, and the output of both tires and tubes is to be considerably increased.

Innis, Speiden & Co., Inc., manufacturer, importer and distributer of chemicals for the rubber industry, has moved its Chicago offices and warehouse to a new building at 722-724 West Austin avenue, where facilities for handling business will be greatly improved.

From May 1 to November 1 the Lundin Textile Co. will be in temporary quarters at the Brooks Building, 223 West Jackson Boulevard, Chicago, Illinois, and after November 1 will be permanently located in the new Fabrics Building, 325 South Franklin street, Chicago.

The Minneapolis, Minnesota, branch of the Pennsylvania Rubber Company of America, Inc., Jeannette, Pennsylvania has been moved from the Terminal Building to a four-story building at 100 Third avenue. With increasing business larger quarters had become necessary.

The Ajax Tire Co., Inc., Denver, Colorado, is now as a distributing agent handling Ajax Tires. B. P. Strickland is vice-president.

The Broadway Tire & Supply Co., Broadway and Biddle street, Milwaukee, Wisconsin, is carrying on a wholesale and retail business in United States tires, as well as automobile accessories. Peter G. Melchiors is president.

A good business is reported by the General Tire Sales Co., 519 West Broadway, Muskogee, Oklahoma, a distributer of General cord tires. The sales department of the retailing organization is in charge of C. U. Brewer, who was formerly connected with the India Tire & Rubber Co.

The Rubber Trade on the Pacific Coast

Pacific Coast tire manufacturers and branch managers of mid-west and eastern tire making concerns are directly encouraging the organization in the large cities of all classes of dealers; and although the task of bringing the smaller distributers together even to discuss definite trade policies is very difficult in many places, owing chiefly to keen rivalry, the organizers are sanguine of success nevertheless, especially since they have enlisted the active cooperation of the Automobile Trade Association and its various branches on the Coast. The object of organizers of the tire dealers is not merely to "frustrate the knavish tricks" of the gyps but to sustain the prices established by all tire manufacturers and to correct various unsound business methods among wholesale, retail, and instalment dealers, as well as to help the three classes to make more money with less friction.

Generally speaking, conditions in the rubber trade in the Coast territory are much better than a month ago. The higher cost of crude rubber has afforded many retail dealers good excuse for raising the prices of goods bought when rubber was much lower, and by advising buyers that rubber may get dearer on account of reported shortage dealers have largely increased their volume of sales.

Tire makers and branch concerns generally have raised prices irregularly on account of the rise in rubber, but one of the largest distributers in the West, a concern dealing primarily in automobile accessories but also marketing over half a million tires a year, declares that it has no intention of putting up prices on the products made for it. It expects its tire sales for 1925 to total over 600,000 units, largely high pressure casings.

Among the specialties, rubber flooring is "going over" particularly strong. It is in urgent demand for new office buildings in the larger cities, and many representatives of eastern manufacturers find it hard to provide goods fast enough.

To supply the demand for rubberized floor covering and to manufacture numerous other articles of rubber under processes for reclaiming and devulcanizing patented by Cyrus Field Willard of San Diego, California, the Rubber Products Company of America is building a 70 by 340-foot Class A factory at Huntington Beach, California. The capacity of the plant will be 5,000 square yards of floor covering and six tons of devulcanized rubber daily. Actively interested in the concern are William H. Yetman, president, formerly with the Union Carbide Co., Bethlehem Steel Corporation, and the Pyrene Manufacturing Company of Illinois; Mr. Willard, vice-president; Frank G. Webb, former Brooklyn, N. Y., manufacturer, secretary; J. K. Norstrom, organizer and former president of the Automatic Telephone Co. and who was secretary-treasurer of the Pyrene Co., assistant secretary-treasurer: and Thomas B. Talbert, chairman of the Board of Supervisors of Orange county for sixteen years and a director of the Security Trust and Savings Bank, as director.

James E. Whigan has been appointed factory manager of the new Keaton Tire & Rubber plant in the Potrero district of San Francisco, and of which R. H. Keaton is president. The company has divorced its tire making from its rim business by forming The Motor Rim and Wheel Service of California, with W. D. Smith, president.

Harry T. Dunn, president of the Fisk Tire Co., Chicopee Falls, Massachusetts, attended the conference on May 4 in San Francisco of all California branch managers. He reported that in the tire trade throughout the entire country there was a steady trend back to normalcy and that the evils traced back to the too zealous selling of tires in 1923 had been pretty well corrected. Tire stocks are not by any means excessive, he said; and as to the balloon situation, he stated that of the total Fisk production of 30,000 tires daily in the company's two factories 16,000 are now balloons, and the proportion of balloons is steadily growing greater.

The Jack Tire & Rubber Co., Spokane, Washington, is enjoying much prosperity, its sales for the first four months of 1925 equaling those for the twelve months of 1924. It is turning out a regular line of Jack fabric and cord tires, a full line of Jack full balloons, and also a full line of First National cord tires and tubes. The tube department works overtime. A good-sized line of rubber goods and rubber covering of paper mill rolls also helps to make things hum at the plant. President Jack White is in the East buying additional machinery and extending the market for Jack products, according to Vice-President R. H. Newell. A new process of "tempering" rubber, developed at the plant, is being tried out with much success, it is stated.

With the plant running three shifts every twenty-four hours and doing the largest business in the concern's history, President Harry Huntington of the Huntington Rubber Mills, Portland, Oregon, says that he can not help feeling optimistic. The company makes, besides many mechanical rubber goods, a large part of the rubber heels and soles used on the Coast, and a new product, the Huntington tan sole, said not to mark floors, is being sold extensively to eastern and mid-west shoe manufacturers. Another new line is that of Lewis rubber shock erasers, an automobile spring accessory for which the company has national manufacturing and selling rights.

The Western Vulcanizer Manufacturing Co., Los Angeles, California, formerly Dri-Cure Sales Co., making retreading and vulcanizing equipment, has opened a factory branch at 745 Polk street, San Francisco, in charge of John Weinheimer.

To provide for Coast and Far East trade, the National Lead

Battery Co., St. Paul, Minnesota, will build a large factory for making hard rubber cell batteries at Lacy and River streets, Los Angeles, California, on an acre site, the outlay being $250,000. By making batteries there, an average saving will be made of $1.25 now paid for freight from St. Paul. L. J. Shields is president of the company.

Involving an expenditure of over $100,000 the Samson Tire & Rubber Co. has just completed its building extension program, making the fourth steel addition to its plant in three years on its 10-acre site in Compton, California. According to its founder, President Adolf Schleicher, the plant has a daily production capacity of 2,000 cord tires and 3,000 tubes and is about to install additional machinery, some of it for making balloon tires. For nearly two years the working schedule has been three shifts for every day. The sales territory covers the eleven states nearest the Pacific, and it is expected that the gross volume for 1925 will considerably exceed $4,000,000.

The Goodyear Tire & Rubber Co. at its Los Angeles plant was averaging 5,000 casings and 5,500 tubes daily during May. An abundance of good help was always available, it was reported.

The Hendrie Rubber Tire Co., Torrance, California, of which William Baker is treasurer and resident manager, reports sales steadily on the up grade, the factory outturn now averaging 150 casings and 300 tubes daily.

All the Firestone branches on the Coast report a decided improvement in business, the sales for the Southern California branch reaching 30 per cent higher for April, 1925, than for April, 1924, according to Elmer S. Firestone, Los Angeles branch manager.

Los Angeles five years ago had what appeared then to be a flourishing organization of tire distributers, but sharp competition developed and soon afterward it "blew up." Recently, under the auspices of the Automobile Trade Association, 1353½ South Figueroa street, Los Angeles, California, another and so far successful effort has been made to get the various elements in the tire trade together, considerable credit for the work being due to George Bellis, chairman of the tire men's division of the association. At monthly luncheons and at other sessions the tire sellers are learning the advantage of knowing one another better and the benefits of cooperation.

The Cactus Manufacturing Co., one of the largest makers of tire boots and patches in the Southwest, is adding to its factory at 914 East 59th street, Los Angeles, California, and steadily increasing its sales force. C. J. Emmons is manager.

A new concern in Los Angeles which is making steady headway is the Nemer Tire Reconstruction Co., located at 5497 West Fernwood avenue, near Western avenue, the principal distributing station of the twenty-six maintained by the company being located at 1350 Western avenue. The factory uses modern tire building machinery, having eleven complete building units, and is turning out 250 tires a day. The business is owed by M. J. Nemer, and H. Geabhart is factory manager.

A Phoenix, Arizona, branch of the Kelly-Springfield Tire Co., Akron, Ohio, has been opened by J. P. Cahoon, Los Angeles branch manager, and M. W. Rigney placed in charge.

Dr. Karl Frederick Kellermann, associate chief of the bureau of plant industry of the United States Department of Agriculture, has just finished a survey of the west coast experiment stations. He was, he said, very well impressed with the progress being made in developing various rubber-bearing plants of much potential value to the rubber industry at the government acclimatization station at Torrey Pines near San Diego, and about which much detail was given in THE INDIA RUBBER WORLD, November 1, 1924.

Recent visitors on the Pacific Coast included T. F. Manville, president of the Johns-Manville Co., New York, and Harry S. Quinn of the General Tire & Rubber Co., Akron, Ohio.

J. B. Hutchins, who for nine years has been connected with one of the Pacific Coast branches maintained by The Goodyear Tire & Rubber Co., Akron, Ohio, has been reassigned to the Oakland, California, territory, after some special sales work in the East.

The Rubber Trade in Canada

Canadian rubber manufacturers and dealers while not predicting any outstanding market developments are optimistic as to the future. At this writing tires and other rubber articles have not advanced in price, although crude rubber prices advanced recently. Active demand for all lines of rubber goods is reported, and the approaching season will show even more activity, especially in garden hose and tires.

E. E. Williams has been appointed manager of the branch maintained at Ottawa by the Dunlop Tire & Rubber Goods Co., Ltd., Toronto. Mr. Williams has been associated with the Dunlop organization for the past nineteen years, his most recent duties having included the sales managership of the company's automobile tire division.

L. E. Levey, who succeeds Mr. Williams at Toronto, has also been long associated with the company, his fourteen years of service representing mainly the duties of salesman, although in 1915 he was appointed assistant sales manager of the company's mechanical division.

Sporting enthusiasts are becoming more particular in their choice of athletic and sports footwear. Crêpe soled sports shoes for men are in heavy demand and as the season advances will undoubtedly become more so.

Gutta Percha & Rubber, Ltd., Toronto, makers of rubber footwear, have organized a sales staff that will work in conjunction with their present wholesale distributers in the principal towns of Eastern Ontario and the Province of Quebec in an endeavor to render more efficient service to the retail shoe trade. Distribution through this organization combined with the wholesale distributers will be supervised by A. Upton at Montreal.

The Paramount International Rubber Co., Ltd., Farnham, Quebec, will manufacture rubber products under what is known as the Paramount patented vacuum process. This process has been adopted under license on a royalty basis by prominent manufacturers of rubber goods in many countries.

The reason that Canadian manufacturers want protection is not that the cost of production is greater in Canada than in the United States, but that owing to the great difference in population the cost of marketing goods is much higher in Canada, declared W. H. Miner, retiring chairman of the Montreal branch of the Canadian Manufacturers' Association, at the annual meeting of the Quebec division and Montreal Branch held at the Windsor Hotel the past month.

The Aero Cushion Inner Tire & Rubber Co. of Ontario, Ltd., Wingham, Ont., manufactures inner tires that withstand punctures and blowouts. The company will enter the American market with Aero cushion tires and arrangements have been made for establishing a plant near Pittsburgh, Pennsylvania.

G. Percy Shaw, formerly with the North British Rubber Co., Toronto, is now connected with the Goodyear Tire & Rubber Co., Akron, Ohio, and has been given charge of the sales department of the Goodyear golf ball for the Pacific Coast, with headquarters in Los Angeles, California.

The death of William Tobin, who was well known in the city, occurred in Montreal recently at the Montreal General Hospital after a short illness. Mr. Tobin was for some years superintendent of the mechanical department of the Canadian Consolidated Rubber Co., Ltd. Thirty years ago he came to Montreal and 25 years ago entered the services of the company mentioned, with whom he remained until his death.

The financial statement of the Canadian Consolidated Rubber Co., Ltd., for the year ended December 31, 1924, showed that the net sales amounted to $13,749,497 in 1924, as compared with $14,590,433 the previous year. The directors reelected for the ensuing year are as follows: C. B. Segar, H. E. Sawyer, E. Hopkinson, H. Stuart Hotchkiss, Sir Charles B. Gordon, Lt. Col. Herbert Molson, E. W. Nesbit, Lt. Col. Allan A. Magee, Ross H. McMaster, W. A. Eden, G. W. Charles, V. E. Mitchell, K.C.; A. D. Thornton, W. Binmore.

The Montreal Rubber Works, 53 Rosel street, Montreal, will shortly inaugurate an advertising campaign featuring their new line of Velvet rubber soles.

The Quebec Rubber Co., Ltd., Quebec, has opened a Montreal distributing depot at 4338 St. Denis street for the sale of tires and tubes.

Ames Holden McCready Rubber Co., Ltd., Montreal, has been formed to take over the rubber footwear and tennis business of Ames Holden McCready, Ltd., in liquidation. The head office is at 45 St. Alexander street, with N. M. Lynn as sales manager for Canada.

The B. F. Goodrich Rubber Co., Toronto, has removed from 40 Wellington street, East, to 174 Adelaide street, West.

The motor vehicle law of the Province of Quebec has prohibited motor trucks over certain weights using the Provincial Highways. A new bill has been introduced to allow for greater loads than formerly where wheels are fitted with dual tires to provide for greater weight distribution. This is good news for tire manufacturers.

NEW HIGH FIGURE FOR RUBBER GOODS EXPORTS

Shipments of American rubber goods during March, at $4,411,107, represented the highest monthly total since the Rubber Division of the Department of Commerce was established in August, 1921. This improvement is in part due to larger exports of automobile tires, which goods have shown a steady advance since early 1924, culminating in shipments during March of 151,352 casings, value $1,777,093, and 164,138 inner tubes, value $268,089. All classes, however, of rubber products, with the exception of waterproof rubber boots and shoes, have been of unusually good volume, and have contributed toward making the March total a record one.

Footwear exports during March included 46,310 pairs of rubber boots and 57,320 pairs of rubber shoes, an unusually good figure for this normally slack season. Shipments of rubber heels and soles amounted to 289,301 pounds, value $89,321, the customers for these products not being limited as formerly to the Latin-American countries, but including additional countries in Europe and Africa. The most conspicuous advance, however, for this class of goods was indicated by shipments of canvas rubber-soled shoes amounting to 508,801 pairs, value $360,602, a record previously exceeded on only one occasion, in March, 1923, when exports numbered 598,928 pairs.

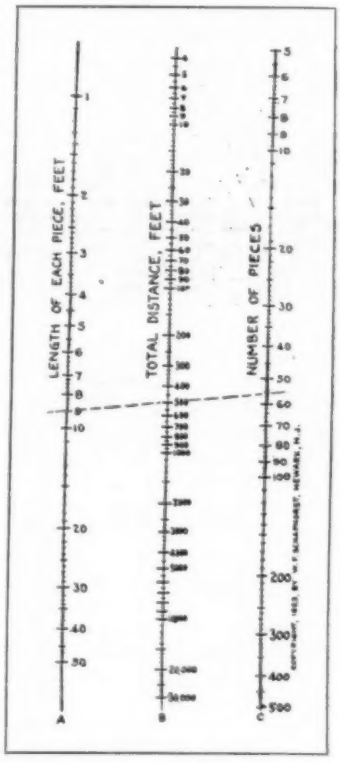
The March trade in mechanical rubber goods was heavier than for several months, and included shipments of 349,750 pounds of rubber belting, 428,959 pounds of hose, and 172,282 pounds of packing. March was a fairly good month for exports of rubber thread as well as rubber sundries and specialties. This applies particularly to the trade in rubber balls, toy balloons, and balloon novelties, the March exports, at $135,894, representing a new high record. The export trade in these goods during the past year totaled nearly $1,000,000.

There was a good demand for American hard rubber products during March, while the higher price of crude rubber is also aiding the American scrap rubber industry. American exports of reclaimed rubber go chiefly to Canada. In general the March export trade in rubber goods was most encouraging.

A Handy Chart for Rubber Engineers

By W. F. Schaphorst, M. E.

Very often the rubber plant engineer desires to compute the number of lengths of pipe necessary to make up a pipe line of a given length, the number of lengths to reach a certain depth in a given well, the number of boards to make a given well, etc. Here is a chart that will give the number of pieces by simply laying a straight edge across the chart. The number of pieces of pipe, or the number of lengths of board, etc., is given in Column C.



Computation Chart

For example, if a pipe line 500 feet long is to be built and pieces of pipe 9 feet long are available, how many lengths of pipe will be needed?

The dotted line running across this chart shows how easily it is done. Simply run the line through 9, Column A, and 500, Column B, and the intersection with Column C shows the answer to be slightly over 55. In other words, about 56 pieces of pipe, pieces of lumber, etc. would be required to make a total distance of 500 feet.

It will be noted that the range of the chart is very great. It will take care of a total length varying from 4 to 30,000 feet. The length of each piece may vary from 1 foot to 50 feet, and it will take care of any number of pieces from 5 to 500.

As a matter of fact, the chart has no limitations whatever. By simply adding two ciphers to any figure in Column B, two ciphers would have to be added to the figures in Column C. Thus, if the total length were 50,000 feet instead of 500, the same dotted line drawn across this chart would give the answer as "about 5,600 pieces" instead of 56. Or, if the total distance were 500,000 feet, which means that three ciphers are added to Column B, the answer in Column C would be "about 56,000 pieces."

To be sure, the chart is not absolutely accurate but it gives surprisingly close results and is excellent for use in estimating or for checking up longhand figures.

BRAZIL'S CRUDE RUBBER EXPORTS DURING 1924

During 1924 Brazil's exports and imports of all commodities reached a total value of £95,103,000 and £68,949,000 respectively, as compared with £73,184,000 and £50,543,000 respectively for 1923. Crude rubber exports, at 21,568 tons, held in 1924 the seventh place, while cotton at 6,464 tons, ranked as tenth. Throughout the past year the United States has maintained first place in the foreign trade of Brazil.

Activities of the Rubber Association of America

March Production, Inventory and Shipments of Tires—Crude Rubber and Fabric Consumption

With the single exception of fabric casings, all classes of tires, including high pressure, solid and cushion, and balloons, as well as high pressure and balloon inner tubes, have shown an increase during March in both production and shipments. Inventories, except for solid and cushion tires, have however correspondingly increased. Another noteworthy fact is that March shipments of high pressure casings, numbering 1,708,352, represent comparatively little decline from the figures for the corresponding month of the year previous, or 1,822,292, while the records for fabric tire shipments have shown a continued falling-off since last August. The total of only 616,350 fabric casings shipped during March of the present year compares most unfavorably with the figure for March, 1924, of 1,027,338. Improved conditions are evidenced however in the records for solid and cushion tires, where both production and shipments have steadily increased during the first quarter of the present year, while inventories have correspondingly declined.

The March advance, however, in the totals for both balloon casings and balloon inner tubes is particularly remarkable. The production of the former class of goods has jumped from 740,106 casings in February to 1,217,367 in March, while shipments have correspondingly risen from 764,874 to 1,168,277 for the two months mentioned. The inventory figures for these tires indicate only a slight advance from 877,851 for February to 926,303 for March. In the same fashion the production of balloon inner tubes has grown from 776,855 for February to 1,354,434 for March, with shipments for these two months totaling 738,734 and 1,162,910 respectively. The inventories, totaling 1,135,649 in March as against 951,539 in February, represent, however, a slightly larger increase than that for balloon casings.

The development of the tire industry during 1925, and the high figures for March especially, are also indicated by the records for crude rubber consumption, where the total amount used during March by American tire manufacturers is shown as being 46,365,630 pounds, a great advance over February when the total stood at only 41,720,847 pounds. The cotton fabric used during March in tire production also represents, at 15,040,609 pounds, a big increase over the February figure of 13,363,986 pounds. The above statistics were compiled from reports rendered by 50 manufacturers of high pressure and balloon casings, ten manufacturers of solid and cushion tires, and 50 manufacturers of high pressure and balloon inner tubes.

All the following figures compiled by the Rubber Association represent 75 per cent of the industry.

Inventory—Production—Shipments of Pneumatic Casings—Inner Tubes—Solid Tires—Rubber and Fabric Consumption

	High Pressure Pneumatic Casings					
	Cord			Fabric		
1925	Inventory	Production	Total Shipments	Inventory	Production	Total Shipments
January...	3,562,701	1,999,410	1,618,169	1,498,309	1,009,201	908,260
February..	4,108,082	1,996,488	1,458,136	1,710,425	944,168	718,626
March.....	4,369,673	2,000,939	1,708,352	1,836,228	738,625	616,350

	High Pressure Inner Tubes			Balloon Inner Tubes		
1925	Inventory	Production	Total Shipments	Inventory	Production	Total Shipments
January...	7,756,467	4,171,812	3,643,841	920,728	585,243	538,533
February..	8,815,514	3,977,721	2,989,606	951,539	776,855	738,734
March.....	9,540,993	3,895,688	3,120,624	1,135,649	1,354,434	1,162,910

	Balloon Casings			Solid and Cushion Tires		
1925	Inventory	Production	Total Shipments	Inventory	Production	Total Shipments
January...	901,031	546,146	563,315	196,774	52,464	44,814
February..	877,851	740,106	764,874	191,733	53,058	55,646
March.....	926,303	1,217,367	1,168,277	175,010	56,751	69,833

	Cotton and Rubber Consumption in casings, tubes, solid and cushion tires	
1925	Cotton Fabric Pounds	Crude Rubber Pounds
January.....	12,310,822	42,170,869
February.....	13,363,986	41,720,847
March.....	15,040,609	46,365,630

Statistics Compiled from 1925 Questionnaire Covering the First Quarter of 1925 [1]

	Long Tons		
Reclaimed Rubber	Inventory at End of Quarter	Production	Shipments
Reclaimers solely (7).....	2,822	15,255	16,295
Manufacturers who also reclaim (20)..	4,187	10,098	6,627
Other manufacturers (52).....	2,229	.....	.....
Totals.....	9,238	25,353	22,922

	Long Tons		
Scrap Rubber	Inventory at End of Quarter	Consumption in Manufacture Reclaimed	Due on Contract at End of Quarter
Reclaimers solely (7).....	31,096	17,812	8,971
Manufacturers who also reclaim (17).	7,924	14,818	7,443
Other manufacturers (15).....	1,025	.....	.....
Totals.....	40,045	32,630	16,414

NUMBER OF TONS OF CRUDE RUBBER CONSUMED IN THE MANUFACTURE OF RUBBER PRODUCTS AND TOTAL SALES VALUE OF SHIPMENTS OF MANUFACTURED RUBBER PRODUCTS

Products	Number of Tons of Crude Rubber Used	Total Sales Value of Shipments of Manufactured Rubber Products
Tires and Tire Sundries:		
Automobile and motor truck pneumatic casings	51,159	$116,752,000
Automobile and motor truck pneumatic tubes.	14,660	19,563,000
Motorcycle tires (casings and tubes).....	64	431,000
Bicycle tires (single tubes, casings and tubes)	197	1,034,000
All other pneumatic casings and tubes not elsewhere specified	.....	103,000
Solid tires for motor vehicles.....	4,166	8,165,000
All other solid tires.....	109	190,000
Tire sundries and repair materials.....	988	4,019,000
Totals	71,343	$150,257,000
Other Rubber Products:		
Mechanical rubber goods.....	5,339	$24,052,000
Boots and shoes	3,890	22,992,000
Insulated wire and insulating compounds....	954	8,063,000
Druggists' sundries, medical and surgical rubber goods	696	3,335,000
Waterproof cloth, clothing and rubber sheeting	851	5,147,000
Hard rubber goods.....	898	3,315,000
Heels and soles.....	2,204	5,109,000
Miscellaneous, not included in any of the above items	1,467	5,986,000
Totals	16,299	$77,999,000
Grand total—all products.....	87,642	$228,256,000

[1] Number of rubber manufacturers that reported data was 213; crude rubber importers and dealers, 44; reclaimers (solely), 7; total daily average number of employes on basis of third week of January, 1925, was 147,051.

It is estimated that the crude rubber consumption figures are 90 per cent of the total, and the crude rubber inventory 95 per cent of the total for the entire industry.

INVENTORY OF CRUDE RUBBER IN THE UNITED STATES AND AFLOAT FOR UNITED STATES PORTS

	Long Tons			
On Hand	Plantation	Pará	All Other	Totals
Manufacturers	41,012	2,760	1,256	45,028
Importers and dealers.....	8,633	723	118	9,474
Totals on hand.....	49,645	3,483	1,374	54,502

	Long Tons			
Afloat	Plantation	Pará	All Other	Totals
Manufacturers	16,142	95	35	16,272
Importers and dealers.....	28,769	970	243	29,982
Totals afloat	44,911	1,065	278	46,254

SERICITE

Sericite is a comparatively new compounding ingredient which is gaining in popularity for use in the manufacture of records and various kinds of hard rubber. It is a micaceous talc, the fibrous or scaly nature of which assists in binding the rubber mixing together.

The Rubber Trade in Europe

Great Britain

CORRESPONDING to the recent rapid advance in the prices of crude rubber are the continued expressions of approval or disapproval in connection with the much-discussed restriction policy. In general the Stevenson scheme is represented as the preserver of the rubber industry, although criticism of the measure from so influential a source as the Dunlop organization is not without its effects. Particularly from the producing companies who are now issuing their annual reports come words of praise for the plan which, according to one executive, "has saved numbers of British companies from ruin and has compelled users of rubber to pay a fair economic price for their supplies. . . . If no restriction scheme had been introduced the weaker companies, unable to fight against low prices, would have had either to go into liquidation or temporarily abandon their estates. To what extent this would have reduced the output of rubber and put up prices it is difficult and even impossible to estimate." Another says, "It is restriction which has, in great measure, kept our enterprise alive; for had there been no restriction, prices would certainly have fallen still further, so I may say that our lives have been saved by restriction, although it has reduced our crops by nearly half."

R.G.A. Replies to Criticism of Restriction

At the annual meeting of the Rubber Growers' Association, held April 29 at Cannon Street Hotel, London, the chairman, H. Eric Miller, presided, and in the course of his remarks discussed several matters of importance to the industry. In particular he strongly defended the Stevenson restriction scheme, saying in part:

"In speeches at general meetings or in communications to the press, certain persons have given prominence to various aspects of the restriction policy as they see them. No objection can be taken to criticism which is founded on a broadminded desire to promote the greatest good of the greatest number, and I believe the restriction scheme has stood the test, not only of criticism conceived in that spirit, but also of criticism based on much lower grounds. The scheme itself was framed with due regard to the interests of all the sections which go to make up the rubber trade of the world, and last, but not least, of the millions of consumers who, in one form and another, derive benefit from the use of rubber. I have no desire to flatter the Stevenson Committee, but I think it is no secret that even they visualized the prospects of marked expansion in the world's use of rubber.

"Some critics studiously ignore the surplus stocks of rubber which were in existence three years ago, and which were having such a disastrously depressing effect on the market, also the fact that for some years past potential normal production has been largely in excess of the increased consumption. I estimate that actual exports in the two and a half years since November 1, 1922, have been well over 250,000 tons less than full production would have been if there had been a profitable outlet for all the rubber which could have been produced. During the same period about 150,000 tons of surplus stocks have been absorbed.

"The restriction scheme in general represents an honest attempt to grapple with the problem of supply and demand, and, in my judgment, no criticism of it carries the slightest weight unless the probable future is visualized as well as the past and the present. I consider releases under the scheme should be forthcoming at the rate of 10 per cent additional, not only on May 1, but again on August 1 and November 1, which would bring us up to an 85 per cent basis. That rate will provide sufficient rubber during 1926 to cover increased requirements and allow a small margin for replenishing stocks to some extent. People who agitate for greater releases immediately overlook the fact that the bulk of the tires to be sold this summer have already been manufactured, and that there is generally an easing off in July, August and September. When greater manufacturing activity is resumed toward the end of the year, export releases will be on a substantially higher basis, and it is well known that most producers are carrying a certain amount of rubber in excess of the present low export figure so that the increased releases can be shipped promptly."

In this connection the *Financial Times* states in an editorial entitled "The Future of Rubber:"

At a batch of general meetings of rubber producing companies held recently, the burden of the speeches by the various chairmen was that it would be the height of folly at this juncture to tamper with or modify the Stevenson restriction scheme. Incidentally, the fallacy that increased consumption and not output restriction is alone responsible for the better price of rubber and the improved statistical position was duly exposed.

The would-be wreckers of the scheme overlook the fact that during the last two years the market has been relieved of a very large potential supply of rubber, which but for the limitations imposed upon output would assuredly have been forthcoming. The increased consumption, important and welcome as it is, would have been entirely swamped.

It is not suggested nor is it desirable that the price of rubber should continue to rise indefinitely. Indeed, the majority of producers can show a very satisfactory return on capital even if there be no improvement upon the present level. But fluctuations are inevitable. An appreciably higher price may be reached temporarily before the year is out, but an average of no more than 1*s* 9*d* for the next year or two will go far to compensate for the run of poor seasons, which, it may reasonably be inferred, are now a thing of the past.

Institution of the Rubber Industry

The diploma scheme of the institution has been fully organized and the names of the ex-officio members of the board of examiners as well as of the examiners themselves are now being published. The former group includes Sir Stanley Bois, the president for the current year; Alexander Johnston, immediate past president and also chairman of the India Rubber Manufacturers' Association; and D. F. L. Zorn, the chairman of the Institution's council, and also chairman of the Rubber Shareholders' Association, which latter body it is proposed to amalgamate with the Institution as a separate section. The first examination for the Associates Diplomas of the Institution has been fixed for June 17 next.

The London and District Section of the Institution of the Rubber Industry held the last meeting of its fourth session on April 6, Harry Symington, chairman of the Rubber Trade Association of London, presiding. A paper by Sir Henry Wickham, entitled "Notes from a Pioneer on Rubber from the Latex," was read on behalf of the author by Fordyce Jones.

McKenna Automotive Duties Reimposed

Of interest to the rubber industry is the news that the McKenna automotive duties of 33 1/3 per cent are to be reimposed, such legislation to become effective July 1. The new tariff measures apply to all imports of passengers cars, motorcycles, parts and accessories, although tires, trucks and buses are to remain on the free list. A preferential rate of 22 per cent is to be granted to the first-mentioned Canadian products.

The proposed reestablishment of these duties is resulting, according to some accounts, in an unprecedented dumping of automobiles into all British ports, and in view of these conditions a change in the date of the proposed duties to June 1 has been sug-

gested. French and Italian makers of light cars, and American automobile manufacturers to some extent, have been the gainers in recent months through the Labor Government's policy of abolishing during last August the McKenna duties.

British Notes

The Rubber Growers' Association is making preparations to participate for the second time in the British Empire Exhibition at Wembley. The Association exhibit will again be housed in the Malayan Pavilion, and many lines of rubber goods will be on display, such goods including crêpe soling and rubber flooring. The main feature, however, will be an exposition of the many uses of rubber in the home, and for this a special stand is to be erected.

Several British tire manufacturers are now announcing increases of from 10 to 12 per cent in the prices of their casings. These manufacturers point out that while tire prices in the United States, Germany and France have been advanced, England has been hitherto almost the only country unaffected by the rise in the cost of rubber.

A verdict in favor of the plaintiff has been rendered in a case regarding the use of a trade name, the plaintiff being the Reliance Rubber Co., Limited, 212-213 Upper Thames street, London, E. C. 4. According to the final decision, the defendant company, the Reliance Tire Co., Limited, is to be restrained from carrying on business under its present name or under any name which colorably resembles the name of the plaintiff concern. An injunction also restrains the defendant company or its agents from selling or advertising any tire as a Reliance tire. The costs of the action are to be paid by the defendant organization, which is allowed six weeks to change its name, there being however no suspension of the injunction in regard to the selling of tires.

There is a considerable and growing market in Wales for rubber play balls and toy balloons, the sources for stocks of such goods being England, Austria, France, Germany and Sweden. Stocks come almost wholly through agencies in London. The most popular play ball in Wales is colored with red or blue glaze, and with rings of other colors overlaid. Such balls vary in size from 2 inches diameter to 8 or more inches. The 3-inch or 4-inch size is apparently most in demand. Supplies of rubber balloons are almost exclusively from British or American sources, wholesalers claiming that the American product is greatly superior to the British in both elasticity and life.

England continued to lead other countries during 1924 in importations of American-made solid tires, the total value for the year being $793,178, as compared with the 1922 figure of $188,146.

Germany

The Wuppertal, which is the center for the manufacture of elastic bands and webbing, is not having a particularly pleasant time of it, despite the fact that there is a good demand for its products. The trouble is that after the war numbers of factories sprang up over night, as it were, and immediately launched a policy of underselling which not only hurt old-established firms but reacted on themselves like a boomerang. Unfortunately the frequent failures of these mushroom firms do not in any way prevent the coming into existence of similar firms and so overproduction and underselling continue to undermine an otherwise profitable industry. Slack payments add to the other troubles of the older firms, while the greatly diminished export trade, formerly of considerable importance, does not help to mend matters. Nevertheless there are indications that the business is becoming sounder and the growing demand for new designs and good quality should assist the industry in the right direction.

Decreasing Profits

A few years ago, German company reports generally showed substantial profits and consequently handsome dividends. But even at that time it was claimed that these profits only seemed large owing to the confused state of the country's money matters. Now that most companies are on a gold basis a better view of conditions can be obtained and this shows a considerable decrease in profits. However, it is not only the effect of conversion to a gold basis that is responsible for this situation. The fact is that although business in on a healthier foundation it is much less active than formerly. Competition from foreign countries is keen and only too often successful; high taxes add to the cost of production, which is further raised by the recent rapid increase in the cost of two of the most important raw materials, rubber and cotton.

Protests against the taxing system have been loud and frequent. Something was done about it a little while ago to alleviate conditions, but not nearly enough. Of late the government is considering plans of reorganizing the taxing system, but what the outcome for the business man will be can only be speculated about.

Meanwhile, several recent company reports reflect the unfavorable situation. Thus the Mannheimer Gummi-Gutta Percha und Asbestfabrik A.-G., Mannheim, with a capital of 1,205,000 gold marks, reports net profits for the past year of only 1877.35 gold marks. No dividend was turned out.

The Continental Caoutchouc und Gutta Percha Compagnie, Hannover, states that though the volume of business increased during the last year as compared with the year before, prices were poor and frequently barely covered the cost of production, especially as far as export trade was concerned. Competition in foreign countries was severe, the chief competitors being Italy, France, America, England and Belgium. The firm now has its own business houses in Amsterdam (Holland), Berlin, Braunschweig, Bremen, Breslau, Dresden, Cologne, Leipzig, Magdeburg, Mannheim, Munich, Nurnberg, Stuttgart, Erfurt, Frankfurt-am-Main, Hamburg, Königsberg (Germany), Buenos Aires (Argentina), St. Gallen (Switzerland). The number of persons in the employ of this concern on December 31, 1924, was 14,483 against 11,590 at the end of 1913 and 11,896 at the end of 1923. The sum of 3,033,917.21 marks was paid out in taxes; this is more than the net profits, which came to 3,017,977.51 marks. In spite of the numerous difficulties encountered, business was considered satisfactory and the outlook promising, provided, of course, no unforeseen adverse circumstances intervene.

The Hannoversche Gummiwerke Excelsior A.-G., Hannover, reports that their rapidly increasing business made heavy demands on the capital, consequently the net profits of 99,181 marks left after writing off 311,232 marks for equipment, etc., will be carried forward and no dividends will be distributed.

Price Convention for Surgical Goods Abolished

Some months ago mention was made in these columns of the waning influence of the various price-fixing bodies for the different branches of the rubber industry. Now comes the news of the abolishing of one of the most important of these organizations in the rubber industry. For several years the Price Convention for hard and soft rubber surgical goods had been functioning, but latterly it existed in name only. There had always been a large number of smaller factories which refused to come under its influence and as business got worse they started a policy of underselling which soon infected the weaker members of the convention. Of late, however, even reputable firms had found it necessary, if they were to continue to exist, to ignore the rulings of this organization. Consequently, the convention reached a condition where its continuance was wellnigh farcical and it was wisely decided to abolish it.

German Tires in Bulgaria

The consumption of tires and tubes for automobiles in Bulgaria is developing slowly. German goods of this type meet with strong competition from foreign countries, particularly France and Italy. During 1923 Germany sent to Bulgaria 176 quintals of automobile tires and tubes, while at the same time France sent

215 quintals, Italy 156 quintals, England 63 quintals and Austria 21 quintals. For the first half of 1924 the figures were: France 70 quintals; Italy 53 quintals, and Germany 47 quintals.

New Rubber Goods

German rubber manufacturers appear to be expending no inconsiderable portion of their energies and ingenuity in producing toy novelties. Almost every day a new variety appears on the market. The novelties introduced from America are to a great extent responsible for the great activity in this field. Inflatable toys, balloons, and articles of this type come in for special consideration. A new toy of this kind that has become very popular here is a flying bird of rubber with movable wings of other material. A rubber cord passes around the body of the bird and ends in an elastic or non-elastic string by which to hold the toy after it is inflated.

Among other recently patented inflatable toys are an illuminated balloon and balloons shaped like flowers.

Not only in toys but also in bathing accessories is the stimulus of American example felt. German bathing outfits were not particularly graceful five years ago or so, durability apparently being the first consideration. But the artistic results achieved with pure sheet rubber in other countries, notably America, have influenced manufacturers here too, so that at present bathing caps in a great variety of styles, colors and color combinations, of German manufacture, may be had. More recently sheet rubber bathing suits have been launched, one firm advertising form-fitting rubber suits in various colors, trimmed with rubber or rubberized ribbons, bows and flowers.

The Continental Caoutchouc und Gutta Percha Compagnie, Hannover, has on the market a new line of attractive bathing shoes of rough-surface rubber in a variety of colors and decorations in harmonizing or contrasting shades.

France

During the first quarter of 1925 French exports of tires and tubes of all kinds amounted to 5,958,900 kilos, gross weight.

The estimated number of automobile casings was 495,250. The biggest customer for French tires was the United Kingdom which took 1,433,400 kilos (among which about 110,300 automobile casings); Switzerland took 719,100 kilos (55,300 automobile casings); Belgium and Luxemburg, 445,700 (34,300 casings); Australia, 378,300 kilos (37,800 casings); Spain, 317,500 kilos (27,800 casings); Italy, 200,900 kilos (15,500 casings). Besides these, large amounts went to Algeria, Morocco, French Indo-China, Tunis, where the French practically have a monopoly of the trade, and the South American States.

French export trade in rubber footwear is not of much importance outside of Europe and the French colonies. In Europe, England, the Balkan States, Belgium, and the Netherlands are the chief markets for these goods, total exports of which came to 707,300 kilos, estimated to include 1,180,250 pairs, during the first quarter of 1925.

Hungary

The Hungarian Rubber Goods Factory and the Dr. Dorogi & Co. Rubber Manufacturing Co. are reported to have effected a merger. It seems that work at the Dorogi plant is to continue under a separate management. There are two other small rubber factories which may also be absorbed by the Hungarian Rubber Goods Factory, it is said. The recent merger gives this concern a monopoly, and as the import duties on rubber goods are high, it should be able to get hold of practically the entire domestic market. It is the only local concern making cord tires exclusively. These enjoy a satisfactory sale here and are also exported to neighboring states. The company is also well-equipped for the manufacture of rubber toys.

During 1924, Hungary imported 115,500 kilos of tires and exported 42,100 kilos. The local production by the Hungarian Rubber Goods Factory mentioned above was 10,000 tires for the year. The chief imported tires are of German, French and Austrian origin. Of late American tires have been making some headway. The high import duties puts the price of imported tires above world market prices. Cordatic tires (local make) size 760 by 90, sell at about $18.90, while foreign tires of the same size sell as follows: Dunlop, $23.10; Michelin, Continental and an American make, about $28.

Recently balloon tires have been introduced here too.

Italy

Italy's trade in rubber and rubber manufactures during 1924 showed a gain all around.

Crude rubber imports were 9,017 metric tons, value 100,623,562 lire against 8,729 metric tons, value 88,738,666 lire. Gutta percha imports came to 381 metric tons, value 15,044,773 lire against only 118 metric tons, value 3,995,180 lire.

In the imports of manufactured goods, pneumatic tires and tubes took the lead, the figures being 1,444.1 metric tons, value 37,014,000 lire as compared with 1,419.4 metric tons, value 37,052,000 lire in 1923. About three-fourths of the tire imports came from France and England. French shipments show a steady increase since 1922 but both English and American supplies decreased substantially from the amounts recorded in 1923. Other imports include: solid tires and rims, 169.2 tons, value 1,720,000 lire in 1924 and 113.9 tons, value 1,319,000 lire in 1923; belting, 60.3 tons, value 1,997,000 lire and 67.7 tons, value 1,955,000 lire in 1924 and 1923 respectively; rubberized piece goods, 191.3 tons, value 6,704,000 lire in 1924 and 179.1 tons, value 5,613,000 lire in 1923.

Total exports show an increase from 156,428,145 lire in 1922, 185,406,478 lire in 1923, to 260,446,117 lire in 1924. The chief exports were tires, of which 7,345 tons, value 199,475,594 lire left the country in 1924 as against 4,908.3 tons, value 127,253,496 lire in 1923 and 3,319.5 metric tons, value 121,156,224 lire in 1922. Solid tires including rims were second on the list and amounted to 2,112.4 tons, value 31,298,522 lire in 1924, 1,744.1 tons, value 27,193,280 lire in 1923 and 759.5 tons, value 11,064,486 lire, in 1922.

Great Britain, Belgium, Spain, Rumania, Argentina, Brazil, Dutch East Indies were the largest consumers of Italian tires.

Austria

The year 1924 was a favorable one for the Austrian rubber industry. Exports to England, Germany, Italy, Holland and Poland increased, particularly in hard rubber goods due to the growing interest in radio. On the other hand shipments of these goods to America and some other countries declined. Austrian toys enjoy a wide popularity and are sold to practically every European country. Vienna has the largest factory in the European continent for the manufacture of rubber balls.

The growing competition of France, Germany, Italy and to a certain extent America in the tire field makes the situation difficult for local manufacturers. Even in the case of solid tires Austrian firms seem to be losing ground. However, Austrian inner tubes find an extensive sale both locally and abroad and the production outlook is favorable.

Total exports of Austrian rubber goods in 1924 were 5,586 tons, value $6,300,000, and imports 1,207 tons, value, $1,500,000. In 1923 the exports came to 4,324 tons, value $5,000,000 and the imports 1,334 tons, value $1,700,000. Imports of crude rubber in 1924 were 2,500 tons against 2,270 tons in 1922.

The leading rubber concerns are: Semperit Oesterreichisch-Amerikanishe Gummiwerke A.-G, Vienna; Asbest & Gummiwerke Calmon G. m. b. H., Vienna-Stadlau; Vereinigte Gummiwarenfabriken Hamburg-Wien, varm. Menier-Reithoffer, Vienna; Josef Reithoffer's Soehne, Garsten b. Steyr; Josefsthaler Gummi- und Asbestwaren-Fabrik G. m. b. H., Josefsthal. These five concerns and another are organized in a syndicate and employ about 10,000 persons. Wages at present, per hour, are: skilled workmen, $0.12; unskilled assistants $0.095; female assistants $0.06.

The Rubber Trade in the Far East

Malaya

THE rising market is being watched with the greatest interest here and forecasts of production and consumption for the near future are eagerly studied. These forecasts vary to a fairly considerable extent as regards figures for outputs and world requirements but on the whole the opinion is that a shortage is already at hand.

Restriction Forecast

In the *Straits Times* an official forecast of exports from the restriction areas is published. This is based on assumptions of percentage increases depending on the price continuing above 1s. 6d. per pound and on the experience that about three-quarters of the exportable allowance is shipped during the first two months of each quarter.

Actual Exports	Standard Production Malaya	Exportable Percentage	Tons
9th Quarter ended Jan., 1925	256,200	50	8,685
10th Quarter	256,200	55	35,227
11th Quarter	256,200	65	41,632
12th Quarter	256,200	75	48,037
4th Restriction year, Nov.-Dec., 1925	269,010	85	42,873
Total restriction area			176,454
Add small holders' allowance			13,546
Add Singapore and Penang output			4,000
Total for Malaya			194,000

Similarly, the supply available from Ceylon in 1925 is worked out and placed at 44,000 tons, giving an estimated total of 238,000 tons for the restriction areas.

If to these figures is added the average predicted for other sources by other authorities, the total world supply for 1925 comes to about 478,400 tons against an estimated consumption of over 500,000 tons. Consequently it is expected that a 95 per cent release of rubber from Malaya and Ceylon will be due by the beginning of February, 1926.

The only fear now is that anti-restrictionists may succeed in getting restriction removed too soon, thereby causing a relapse to slump conditions.

Diseases of Rubber

Cautious people, ever mindful of the effects of epidemics amongst crops like coffee and cinchona, from time to time raise warning voices with regard to the necessity of an adequate number of mycologists to study the diseases of rubber so that producers may be armed against dangerous attacks of disease among their trees. Unfortunately, it seems that directors on the whole are not inclined to give much support to the work of scientists in this direction. This is proved by the small amounts of money spent on such work as compared with the large sum of money invested in the industry.

The *Malayan Tire & Rubber Journal* has from time to time touched on this subject and recently had something to say about the matter again. Attention was called to an appearance of what might almost be termed wanness among the trees in Malaya, a condition which has been noted by certain experienced planters in Java and Sumatra as well. It would seem as though the constitution of the trees had been weakened by their sojourn in these parts.

At a recent planters' meeting, Mr. Pinching lectured on rubber diseases and stated that owing to insufficient appreciation of scientific research in this connection it has not been possible to investigate the possibility of raising a disease-resisting strain of Hevea. Up to the present it did not appear that any one type of Hevea was more immune than another. Apparently, the incidence of a certain disease depended upon the surroundings of the trees. Thus root diseases are chiefly caused by decaying timber which had not been cleared in time. Discussing the subject of root diseases further, Mr. Pinching said that most of the old rubber planted on land from which stumps had not been previously cleared was subject thereto and the only way to obviate or minimize the danger was to clear soils properly before or immediately after planting.

In the Bruas District of Perak a new disease was found attacking the tapped surface of trees. It usually appeared harmless but although investigations were of very recent date a few cases where damage had been done were found. In Kuala Selangor much anxiety was caused by an epiphytic fern, *Drymoglossum Sp.*, which attached itself to Hevea, and branches covered with it had been found dead, but as yet it could not be said whether the fern had killed the branches or not.

Rubber Propaganda

The rubber propagandist, McGregor Knox, has recently returned from a trip to China in connection with the local propaganda scheme. From what he saw in China he came to the conclusion that a good market for rubber and rubber goods could be developed there in time. With regard to rubber sandals, he said these would have to compete with straw sandals which are worn throughout China and cost from two to ten cents according to quality.

Crêpe rubber soles have been recently introduced into China and appear to be making headway. There is also a fairly large demand for industrial rubber, but the use of rubber and rubber goods in any considerable quantity is at present hampered by the industrial and political conditions in the country.

Restriction Statistics

Statistics for the import and export of rubber for the first quarter of 1925 give total exports 67,642 tons against 65,534 tons in the corresponding quarter of 1924. Imports at the same time were 33,601 tons and 24,576 tons respectively, so that net Malayan exports were 34,041 tons in 1925 and 40,958 tons in 1924.

Figures for imports now distinguish wet and dry rubber. This was not the case last year so that 1924 amounts are estimated and the comparison is: total imports for the first quarter of 1925—33,601 tons, 5,203 tons being dry and 28,398 wet rubber; for 1924—total imports 24,576 tons, of this 4,500 is estimated to have been dry and 20,076 tons wet. According to this, then, the gross increase in shipments of native rubber for 1925 is 8,322 tons.

From the wet rubber a deduction of 25 per cent is to be made, that percentage representing the average loss in weight of native rubber after it has been treated in Singapore, so that the amounts of native rubber become 21,299 tons in 1925 and 15,057 tons in 1924, a net increase of 6,242 tons of dry native rubber.

Then the actual amounts of foreign rubber reexported from Malaya are as follows:

First Quarter	1925 tons	1924 tons
Estate rubber	5,203	4,500
Native (dry) rubber	21,299	15,057
	26,502	19,557

But the net Malayan exports, the amounts for which, as shown above, are arrived at by deducting foreign rubber from total Malayan exports, must therefore be:

First Quarter	1925 tons	1924 tons
Total exports	67,642	65,534
Less foreign rubber	26,502	19,557
Net Malayan	41,140	45,977

There is evidently some confusion about rubber figures yet.

Ceylon

The report of the Rubber Restriction Committee is about to be published. From a summary it is learned that two questions particularly are dealt with, the duration of restriction and the assessment of estates. It is the opinion of the committee that restriction cease at the end of 18 months from the date on which the report was submitted if the percentage of release by that time does not approximate 100 per cent.

In this 18 months, restriction should prove definitely whether it is a failure or not. If full production has been reached by that time, restriction will automatically cease, but if a high percentage of release is not possible by October, 1926, then restriction has failed and should be abolished.

With regard to assessments, it is recommended that the present sliding scale shall apply to new clearings: 120 pounds per acre for rubber from 5-6 years; 180 pounds from 6-7 years; 240 pounds from 7-8 years, and 320 pounds for 8-year-old rubber; but for rubber in bearing, over 9 years old, a drastic alteration is advised. At present no maximum is fixed and standard production of a given estate is assessed on its actual productivity. It is now recommended that the maximum assessment shall be 450 pounds per acre on acreages over 9 years old if such estates can prove that they can produce this amount. That is, the assessment for rubber over 9 years is to vary from 320 to 450 pounds per acre.

Netherlands East Indies

Some interesting data revealed by the investigation of native rubber have already found their way into local papers. Thus it has been discovered that in the southern and eastern divisions of Borneo there are five small factories with a total capacity of dry rubber amounting to six tons a day. These factories turn out nothing but crêpe. Some of them have quite up-to-date equipment; thus one is run by a motor of 100 horsepower.

In Palembang, Sumatra, there are also a few small factories; Pontianak, Borneo, boasts one installation owned by an Arab, while finally Djambi, Sumatra, also has some small factories. In the latter place it is expected that several more will shortly be established. Europeans in Djambi are taking a lively interest in this native industry and investigations are under way to see whether the factories could not be put under European management.

In view of the fact that certain authorities gave good reasons for the opinion that native rubber outputs would remain stationary around 50,000 tons per annum, it is worth noting that estimates for the current year put the native production at 110,000 tons while it is expected that the future will see an enormous expansion in the native enterprises. According to official figures from Malaya, foreign imports, 85 per cent of which consisted of native rubber, amounted to 13,400 tons in March, 1925, against 8,269 tons in March, 1924.

Following the example of cooperation between economic experts and scientists in America, the Netherlands-Indies Association for the Rubber Trade has decided to offer Dr. O. De Vries a place on its board of directors. Some years ago Dr. De Vries made a tour through America and has kept in touch with the chief American consumers of rubber. He is honorary member of the Rubber Division of the American Chemical Society and member of the Crude Rubber Testing Committee. Dr. De Vries has declared that he is prepared to give all possible information to interested members of the above Rubber Trade Association.

The *Archief voor de Rubbercultuur*, January, 1925, devotes its 221 pages to a work by Dr. J. G. J. A. Maas on the Tapping System of Hevea Brasiliensis on Experimental Basis. The first part covers the history of rubber cultivation and a review of the development of the tapping system; part two takes up the analysis of the tapping system; part three discusses the economical considerations in connection with the choice of a tapping system. There are numerous illustrations and tables, besides an extensive bibliography, an English summary and two appendices, one on the tapping systems on the East Coast of Sumatra and the other on world production of plantation rubber calculated on the basis of a new scale of outputs.

Indo-China

Official statistics show that the exports of crude rubber from Indo-China totaled 67,956 quintals during 1924 against 56,960 quintals in 1923 and 46,228 quintals in 1922. Most of this rubber, 50,274 quintals, went to France; 16,907 quintals were sent to Singapore, 389 quintals to China and 386 quintals to other territories.

Imports of rubber manufactures comprised tires and tubes amounting to 4,862 quintals in 1924 and 4,346 quintals in 1923. France supplied 4,354 quintals of the 1924 tire shipments and other countries 508 quintals. Figures for other countries include 140 quintals from Japan and 169 quintals from England. Insulated wire and cables for electricity were almost wholly of French origin, only 31 quintals out of a total of 7,270 quintals being sent by other countries.

EUROPEAN TIRE TRADE DEVELOPING

One of the interesting features plainly indicated in any study of the world's tire trade is the steady growth of the European industry. This is particularly evident in the case of France and Italy, although some of the other countries, as England and Belgium, are also sharing in the general development. The following figures represent approximately the number of motor car casings exported from France in recent years: (1920) 1,100,000; (1921) 1,160,000; (1922) 1,210,000; (1923) 1,510,000; (1924) 1,800,000. An even greater advance is shown by Italy, the amount of casings exported in 1924 being more than double that of 1920, a most surprising record when compared with that of Great Britain, Canada, or even the United States. The figures for Italy are: (1920) 300,000; (1921) 200,000; (1922) 330,000; (1923) 490,000; (1924) 675,000.

Corresponding exports from Great Britain are: (1920) 487,000; (1921) 163,000; (1922) 271,000; (1923) 397,000; (1924) 500,000 (estimated). Belgian tire exports also represent an increase, the totals being: (1920) 50,000; (1921) 60,000; (1922) 70,000; (1923) 72,000; and (1924) 90,000. The decline for 1924 will be noted in the following estimates for the United States: (1920) 1,750,000; (1921) 670,000; (1922) 1,326,000; (1923) 1,363,000; (1924) 1,250,000. Canada's share in the number of motor car casings exported is: (1920) 300,000; (1921) 100,000; (1922) 290,000; (1923) 480,000; (1924) 480,000.

WORLD REGISTRATION OF MOTOR VEHICLES

According to statistics published annually by *Automotive Industries*, there were on January 1, 1925, 3,634,272 motor vehicles, including cars and trucks, in use outside the United States, this representing an increase of nearly 21 per cent over the previous year. The total for the whole world, including the 17,726,507 vehicles registered in the United States, has grown to 21,360,779, a gain of 17.2 per cent in the last twelve months.

With every part of the world contributing toward these increased registration totals, Africa stands first with a gain of 35 per cent, Oceania follows at 32 per cent, Europe at 25, Asia at 15, and America, excluding the United States, at 14. The actual gains made in the various territories (the United States again excluded) were approximately: Europe, 425,000; America, 113,000; Oceania, 70,000; Africa, 26,000; and Asia, 23,000.

ACCORDING TO *Commerce Reports*, UNITED STATES IMPORTS OF crude rubber in January, 1925, were approximately 73,692,000 pounds, as compared with 49,080,000 pounds in January of the year previous. The figure for December, 1924, was 59,152,000 pounds.

Rubber Patents, Trade Marks and Designs

The United States

Issued* April 21, 1925

1,534,208 Fountain glove. D. E. Gibson, Dunkirk, New York.
1,534,214 Bathtub mat. J. T. Holt, Los Angeles, California.
1,534,358 Internally-armored tire. F. A. Burns, Anaconda, Montana.
1,534,365 Combined cushion and pneumatic tire. T. A. Dunn, Jamaica, Iowa.
1,534,367 Inflatable figure toy. F. A. Fanucci, Scranton, Pennsylvania.
1,534,529 Rubber tire. Edward Brice Killen, London, England.
1,534,574 Cushioned wheel construction. J. L. Donat, Chicago, Illinois.
1,534,654 Sponge rubber filling for boxing gloves. L. N. Netz and George Netz, Milwaukee, assignors to the Netz Glove & Mitten Co., Milwaukee, Wisconsin.
1,534,686 Flap for clincher tires. J. P. Colgan, Waycross, Georgia.
1,534,850 Dust cap for valve stems. F. S. Hamilton, Boston, Massachusetts.
1,534,919 Rubber and fiber shoe tread. L. B. Conant, Cambridge, assignor to G. W. Conant, Bridgewater, both in Massachusetts.
1,534,950 Combination corset and brassiere with elastic section. M. Hernandez, Brooklyn, N. Y.
1,534,984 Self-closing valve. W. M. MacDonald, Chicopee, Massachusetts, assignor to A. G. Spalding & Bros., New York, N. Y.
1,534,989 Tire boot. R. L. Peugh, Oklahoma City, Oklahoma.
1,535,053 Golf ball. A. Speedy, London, England, assignor to A. G. Spalding & Bros., New York, N. Y.

Issued* April 28, 1925

1,535,181 Golf ball tee. B. E. Sawyer, Fitchburg, Massachusetts.
1,535,552 Piston packing ring. F. E. Small, assignor to N. M. Small, both of Jamaica, Long Island, New York.
1,535,679 Pneumatic horse collar. J. A. Neely, Waimate Township, Canterbury, and R. P. Henry, Glenavy, near Waimate, New Zealand.
1,535,967 Rubber heel. J. W. Turner, Brownsville, Pennsylvania.
1,536,023 Cushion tire. J. W. Kuhn, Chillicothe, Ohio.

Issued* May 5, 1925

1,536,227 Steering wheel with core embedded in vulcanized rubber. A. H. Leipert, assignor to International Motor Co., both of New York, N. Y.
1,536,816 Toy balloon and paper cap combined. W. M. Sale, Seattle, Washington.
1,536,870 Valve for inflated articles. A. Klotz, Munich, Germany.

The United Kingdom

Published April 8, 1925

228,808 Rubber buffer for door stop. Smith & Davis, Ltd., and H. F. Smith, Beacon Works, Hampton street, Birmingham.
228,817 Bathing cap. L. W. Beman, 230 South Clark street, Chicago, Ill., U. S. A.
228,818 Horseshoe with rubber tread. J. R. Reeve, The Village Farm, Lillington, Leamington.
228,871 Sponge rubber cover for telephone earpiece. B. Lindemann, 20 Dovenfleth, Hamburg, Germany.
228,894 Inflatable ball. N. P. Thygesen, 1 Julius Blomsgade, Copenhagen.
228,915 Tire casing with inflated rubber balls. E. Steenwerckers, Charente-Inférieure, France.
228,968 Cork and rubber floor covering. H. H. Duke, Moseley, Banksia avenue, Rockdale, Sydney, Australia.
229,057 Rubber springs. A. Bulbick, 76, The Crescent, Eastleigh, Hampshire.
229,103 Golf club handle with rubber sleeve shaped over a hand-gripped mold. H. Vardon, Oakdene, Totteridge, London, and C. G. Chard, Tusmore, Tavistock, Devon.
229,121 Crêpe rubber sole. F. Cook, Ltd., 1 South Place, Finsbury, London, and J. C. Cooke, 13, Rockhall Road, Long Buckby, Northamptonshire.
229,129 Garment hanger with pimpled rubber cover. H. G. Lee-Smith, 12 Sheen Gate Mansions, East Sheen, London.
229,144 Punching bag. E. J. Price, 22 Bank street, Walsall, Staffordshire.
229,166 Tire with series of superposed treads. F. L. Rapson, Ottershaw Park, Chertsey, Surrey.
229,168 Clip for electric cables. St. Helens Cable & Rubber Co., Ltd., Trading Estate, and H. Evans, Carlton, Bath Road, both in Slough, Buckinghamshire.

Published April 16, 1925

229,229 Socks with upper edge of perforated rubber. P. L. Schönfeld, 26 Prinzenstrasse, Chemnitz, Saxony, Germany.
229,453 Silk-covered balloon toy. H. F. Anns, 96 Victoria street, Westminster.
229,482 Cushion tire. St. Helens Cable & Rubber Co., Ltd., Slough, Buckinghamshire, and H. C. Harrison, Tay Park avenue, Maidenhead, Berkshire.
229,530 Rubber heel bar for horseshoes. B. Hopkinson, 34 Frank street, Great Horton, and S. Hollings, 45A Preston street, both in Bradford, Yorkshire.
229,547 Split rim. E. C. R. Marks, 57 Lincoln's Inn Fields, London. (J. H. Wagenhorst, 603 Washington street, Jackson, Michigan, U. S. A.)
229,551 Rubber paving block. C. W. Read, Armoury Mills Rubber Works, Connington road, Lewisham, London.
229,570 Practice ball for golf. S. Knight, Union Bank, Toora, South Gippsland, Victoria, Australia.

Published April 22, 1925

229,695 Tire tread. M. N. A. Develay, 24 Rue de Dunkerque, Paris.
229,707 Inflatable lay figure for dressmakers. R. M. Black, Canberra House, Elizabeth street, Sydney, Australia.
229,884 Hard and soft rubber heel. F. Nicholls, 65 Morgan road, and W. P. Nayler, 16 North street, both in Bromley, Kent.
229,886 Cushion tire. J. F. Palmer, 240 Kensington avenue, Buffalo, New York.
229,949 Cushion tire. G. Fowle and J. Bailey, 9 Romilly street, South Shields.
229,978 Sheet rubber brassiere. F. A. S. Gwatkin, 31 Basinghall street, London. (I. B. Kleinert Rubber Co., 485 Fifth avenue, New York, N. Y., U. S. A.)

Published April 29, 1925

230,057 Rubber steering wheel. F. O. Bardelli, 15 Via A. Tadino, Milan, Italy.
230,081 Cushion tire. D. Noblue, 5 bis. Place Gambetta, Ivry, Seine, France.
230,211 Rubber mask for heat treatment of the face. C. Pauley, 405 Dexter avenue, Lockland, Ohio, U. S. A.
230,219 Laminated driving belt. E. G. R. Marks, 57 Lincoln's Inn Fields, London. (Security Rubber & Belting Co., 2837 South La Salle street, Chicago, Illinois, U. S. A.)
230,221 Telephone earpiece employing rubber tube. P. Thomas, 2 York avenue, Wolverhampton.
230,277 Squeegee for spreading tar or for cleaning road surfaces. F. Coleman, Alfreton road, Derby.
230,278 Mats made from old pneumatic tire covers. A. Shaw and A. Shaw & Co. (Huddersfield), Ltd., Albion Leather Works, Albion street, Huddersfield.
230,283 Soft rubber guide for sliding windows. Standard Motor Co., Ltd., and R. W. Maudslay, Canley, Coventry.
230,290 Rubber mudguard. C. H. Cochrane and D. A. Cochrane, 10 Donnybrook street, Belfast.
230,336 Nested inner tubes. W. A. Caldwell, 235 M. H. del Pilar, Manila, Philippine Islands.
230,367 Fabric reinforced inner tube. G. F. Mohlman, 9909 83rd avenue, Edmonton, Alberta, Canada.
230,399 Metal-studded rubber heel. G. E. Schlesser, 424 North Central avenue, Portland, Oregon, U. S. A.
230,465 Air tube with tapered ends. L. A. Laursen, Eau Claire, Wisconsin, U. S. A.

The Dominion of Canada

Granted April 21, 1925

248,814 Air mattress. E. A. Russell, Chicago, Illinois, U. S. A.
248,818 Combined heel, sole and arch support. L. E. Scrannage, Philadelphia, Pennsylvania, U. S. A.
248,900 Cushion connection for cantilever spring suspensions. The Rubber Shock Insulator Co., Inc., assignee of Fred. L. Lipcot, both in New York, N. Y.

Granted April 28, 1925

248,972 Swimming garment with inflatable attachment. J. Czyzykowski, Harrison, New Jersey, U. S. A.
248,973 Nursing bottle with nipple. W. M. Decker, Buffalo, New York, U. S. A.
249,020 Solid rubber tire. J. B. Parker, Middlesbrough, York, England.
249,022 Rubber heel. A. E. Peckham, Grand Rapids, Michigan, U. S. A.

Granted May 5, 1925

249,176 Bathing cap. L. Auster and Marie Auster, both of New York, N. Y., U. S. A.
249,355 Rubber heel. The Goodyear Tire & Rubber Co., assignee of H. E. Morse, both of Akron, Ohio, U. S. A.
249,397 Reinforcing wire fastener for rubber wheel tires. The Tubing & Molding Co., Ltd., assignee of S. S. Ireland, both of Toronto, Ontario.

* Under Rule No. 167 of the United States Patent Office, the issue closes weekly on Thursday, and the patents of that issue bear date as of the fourth Tuesday thereafter.

Chemical patents will be found on pages 537-538; Machinery and Process Patents on pages 541-542

249,410 Cushion tire. George Kiernan, W. A. Browne, and C. W. Pope, all of Auckland, New Zealand.

New Zealand

Published March 26, 1925

51,560 Maternity and hernia belt. S. A. Miller, 201 Fitzgerald street, Christchurch, New Zealand.

Germany

Design Patents Issued, With Dates of Issue

901,685 (January 24, 1925). Tire protector. Gustav Mühle, Hohenthalplatz 8, Dresden.

901,141 (February 6, 1925). Pen or lead pencil holder. Phil. Penin Gummi-Waaren-Fabrik A.-G., Leipzig-Lindenau.

901,146 (February 6, 1925). Endless rubber shoe lace. Vereinigte Gummibandwebereien Tillmanns, Schniewind & Schmidt, Elberfeld.

901,230 (January 9, 1925). Wooden shoe with rubber fittings. Hermann Callsen, Brederby-Angeln.

901,242 (January 20, 1925). Rubber advertising figure. Erich Quednow, Wulferstedt, Kr. Oschersleben.

901,308 (October 7, 1924). Soft, sponge rubber surface pattern roll. Hermann Fromhold, Elankenese.

901,351 (February 5, 1925). Rubber toy. Sachsland Gummiwarenfabrik, Bürgel in Thuringia.

901,407 (February 26, 1925). Rubber gas balloon in the shape of a Zeppelin. Fritz Mücke, Michaelkirchstrasse 19, Berlin.

901,603 (December 18, 1923). Stocking with rubber insert at the toe. Elias Chahadi, Vienna; represented by: P. Theuerkorn, Chemnitz.

901,738 (December 17, 1924). Pressure balance for twin tires. Hannoversche Gummiwerke Excelsior, A.-G., Hannover-Limmer.

901,828 (February 11, 1925). Bathing slipper of multicolored crude rubber sheet. Continental Caoutchouc und Gutta Percha Compagnie, Hannover.

901,829 (February 11, 1925). Bathing slipper of crude rubber sheet with sole of a different color. Continental Caoutchouc und Gutta Percha Compagnie, Hannover.

902,025 (December 15, 1924). Rubber sole for sport shoes and the like. Kongo Gummigesellschaft H. Clermann, Düsseldorf.

902,083 (February 14, 1925). Sanitary garment. Stock & Oelbermann, G. m. b. H., Cologne.

902,175 (February 13, 1925). Rubber glove for industrial purposes. Gummiwerk. Ernst Kniepert, Löbau i. Sa.

902,369 (February 14, 1925). Gas-filled rubber balloon in any shape, internally illuminated by electricity. Erich Kroll, Gleimstrasse 57, Berlin.

902,373 (February 16, 1925). Rubber sponge with device for hanging up. Harburger Gummiwaren-Fabrik Phœnix A.-G., Harburg, Elbe.

902,465 (February 14, 1925). Rubber balloon in the shape of a flower. M. m. v. d. Heyden, Helmstedterstrasse 17, Berlin-Wilmersdorf.

902,580 (February 19, 1925). Tire casing for pneumatic tires. Emil Bähle, Nietleben b. Halle a. S.

902,600 (February 23, 1925). Ninepin with rubber collar. Continental Caoutchouc und Gutta Percha Compagnie, Hannover.

902,666 (February 10, 1925). Rubber tips for furniture legs. Friedrich Philipkowski, Ulmenallee 2, Flensburg-Klues.

902,689 (February 18, 1925). Pelotte of sponge rubber. Karl Stephan, Ilsenburg a. Harz.

902,721 (October 27, 1924). Rubber boat for sanitary bandage. Max Förster, Blasewitzerstrasse 72, Dresden.

902,734 (January 22, 1925). Block belt of rubberized fabric. Rudolf Roderwald, Menzelstrasse 9, Berlin-Grunewald.

902,951 (February 18, 1925). Rubber carpet. Joh. M. Körting & Söhne, Berlin-Steglitz.

902,985 (February 21, 1925). Atomizer with internal condenser for inhaling purposes. Otto Kircher, Elgersburg i. Th.

903,149 (February 6, 1925). Lead-pencil cap of soft rubber, the closed end of which may be used as an eraser. Willy Tschepel, Friedenstrasse 12-13, Berlin-Adlershof.

903,196 (February 23, 1925). Waterproof bag for bathing suits, rain coats and similar garments. Robert Weintraud, Frankfurterstrasse 69, Offenbach a. M.

903,233 (February 3, 1925). Rubber sport belt that may be used to hold up trousers. Bruno Heinzel, Schwoitsch, Kr. Breslau.

903,419 (January 9, 1925). Elastic, solid rubber cord as connecting piece between leather parts. Dr. Arthur Zilz, Friedrich-Auguststrasse 30, Dresden-Blasewitz, and Fritz Sydow, Fürstenstrasse 55, Dresden.

903,559 (February 13, 1925). Rubber caps for the legs of wicker furniture. Richard Gossow, Windscheidstrasse 18, Charlottenburg.

903,583 (February 23, 1925). Rubber insert for leather leggings with roll edge to prevent rubbing of the shoe leather. Hermann Huber, Oppenau i. B.

903,664 (February 16, 1925). Pelotte for rupture bands and the like to support and close orifices and the like. Liga Gummiwerke A.-G., Frankfurt-am-Main-Hausen.

903,784 (February 9, 1925). Block belt with rubber friction bodies vulcanized onto it. Rudolf Roderwald, Menzelstrasse 9, Berlin-Grunewald.

903,811 (March 2, 1925). Rubber water cushion for the sick. Else Blankenstein, Urban-Krankenhaus, Berlin.

903,819 (February 18, 1925). Knitted fabric with rubber thread-insert. Walter v. d. Mühlen, Nordstrasse 26, Barmen.

903,910 (March 5, 1925). Sponge rubber insert for hats and steel helmets. Walter Brömel, Aeussere Prinzregentenstrasse 25, Munich.

903,952 (February 2, 1925). Inflatable rubber toy composed of several figures. Gotthold Schmid, Nagold, Württemberg.

904,109 (February 27, 1925). Display case for erasers and the like. Läufer Gummiwarenfabrik Schwerdt & Renner, Hannover.

904,115 (February 24, 1925). Flettner-Rotorboat as toy. Vulkan Gummiwarenfabrik Weiss & Baessler, Leipzig-Lindenau.

904,289 ((February 13, 1925). Device for simulating the appearing and disappearing of all kinds of fluids from vessels, with the aid of a rubber bladder. Conrad Horster, Friedrichstrasse 17, Berlin.

904,293 (February 14, 1925). Waterproof blouse. Gummikleider-und-Oelzeugfabrik. Karl Künker, G. m. b. H., Crefeld.

904,344 (February 27, 1925). Rubber joker. Sachsland Gummiwarenfabrik, Bürgel in Thuringia.

904,347 (February 28, 1925). Nurses cap of rubberized fabric. Gustav Berlinger & Co., Stuttgart.

904,379 (March 2, 1925). Rubber heel patch. Schmidts Gummiwarenfabrik. Arthur Schmidt A.-G., Stade, Hannover.

904,484 (February 27, 1925). Adjustable rubber stand. Paul Drechsler, Ritterstrasse 58, Berlin.

904,719 (February 20, 1925). Squeaking ball. Niedersächsische Gummiwaren-fabriken A.-G., Hildesheim.

904,823 (March 6, 1925). Supporting spring for arch-supports with upper layer of rubber or other plastic material. Firma Leopold Stecher, Kirchheim u. T. Württemberg.

904,848 (March 9, 1925). Rubber shoe string. Hans Helmerich, Ruprechtstrasse 5, Munich.

904,929 (March 4, 1925). Sport shoe with rubber vulcanized fabric sole. Alfred Wunschelmeier, Oelsnitz i. V.

905,020 (March 4, 1925). Air cushion with rubber value. William Sachs, Lessingstrasse 33, Berlin.

905,203 (January 9, 1925). Plaque composed of rubber. Runge Werke A.-G., Spandau.

905,319 (February 11, 1925). Toy. Sachsland Gummiwarenfabrik, Burgel, Thuringia.

905,376 (March 10, 1925). Protective cover of rubber particularly for hygienic purposes. Weiss & Baessler, Leipzig-Lindenau.

Patents Issued, With Dates of Issue

412,803 (August 3, 1923). Emergency tire. Gerhard Pipirs, Friedrichstrasse 25, Gumbinnen.

413,361 (November 27, 1923). Tire fabric. Antoine Mathias Wolber, Soissons, Aisne, France; represented by E. Lamberts, Berlin, S. W. 61.

Trade Marks

The United States

Two Kinds of Trade Marks Now Being Registered

Under the rules of the United States Patent Office, trade marks registered under the Act of February 20, 1905, are, in general, fanciful and arbitrary marks, while those registered under the Act of March 19, 1920, Section 1 (b), are non-technical, that is, marks consisting of descriptive or geographical matter or mere surnames. To be registered under the latter act trade marks must have been used for not less than one year. Marks registered under this act are being published for the first time when registered, any opposition taking the form of an application for cancellation.

Granted April 21, Act of February 20, 1905

197,529 HALESOLE, with line drawn horizontally through the center of the letters—resilient leather, rubber, fibrous, or composition soles for boots, shoes and slippers. Alfred Hale Rubber Co., Atlantic, Quincy, Massachusetts.

197,542 MERMAID—figure reducing garment or bathing girdle. Model Brassiere Co., Inc., New York, N. Y.

197,571 ART CRYSTAL—rubber and fabric aprons, bibs, bathing caps and scarfs. Vernart Manufacturing Corporation, New York, N. Y.

197,628 ROAMER, in lightface type graded in size so that the largest letters are at the ends—soles and half soles of rubber and fabric. Roamer Rubber Co., Philadelphia, Pennsylvania.

197,772 YOUNG AMERICA, in script, with the words TRADE MARK on the under-scoring flourish of the last letter—rubber nursing nipples United Drug Co., Boston, Massachusetts.

Granted April 28, 1925, Act of February 20, 1905

197,881 SKIPPER—rubberized textile fabric. Archer Strauss Rubber Co., Framingham, Massachusetts.

198,021 Within a diamond shaped border the words KELLY SPRINGFIELD, and below this the inscription 33 x 5 KERFLEX S. S. CORD, SERIAL NUMBER UNDER HERE, this inscription being repeated in the upper triangle of the diamond in reversed type as if reflected—tires wholly or in part of rubber. Kelly-Springfield Tire Co., New York, N. Y.

Granted April 28, Act of March 19, 1920, Section 1(b)

198,028 SILKY-LYLE, in script slanting diagonally upward—narrow braid and narrow elastic webbing. W. L. M. Clark, Inc., St. Louis, Missouri.

198,054 SIDEWALL PROTECTION—pneumatic tire casings. Corduroy Tire Co., Grand Rapids, Michigan.

Granted May 5, 1925, Act of February 20, 1905

198,094 VOGUE, above which is a small design bearing the letters W & L and the words TRADE MARK, QUALITY—shirred ribbon elastic, narrow cotton and silk elastic, braids, etc. Wolfe & Lang, Inc., New York, N. Y.

Granted May 12, 1925, Act of February 20, 1905

198,244 The words: BOSTON SHOE STORE BETTER SHOES FOR LESS MONEY, on a distinctive oval-shaped background—boots and shoes of leather, rubber, fabric, or combinations of these; also hosiery and hats. The Boston Shoe Store, Portland, Maine.

198,260 BRENDUN—overshoes, galoshes, boots, gymnasium shoes, etc., of rubber, leather, fiber, or combinations thereof. Richards & Brennan Co., Randolph, Massachusetts.

198,273 The word DOMINO, each letter being on a domino tile—arctics or galoshes, particularly for women, of waterproof jersey cloth and rubber soles. Converse Rubber Shoe Co., Malden, Massachusetts.

198,338 "T-THRU"—rubber nursing nipples and rubber gloves. The Pyramid Rubber Specialty Co., Ravenna, Ohio.

The Dominion of Canada

Registered

37,580 HYCOE—rubber and gutta percha impregnated fabrics and articles made therefrom; belting of all kinds, tires, brake lining and clutch lining. The Manhattan Rubber Manufacturing Co., Passaic, New Jersey.

37,618 LINERITE—rubber linings for sleeves, conduits and receptacles, ball, pebble, and tube grinding mills. The B. F. Goodrich Co., New York, N. Y., U. S. A.

The United Kingdom

Published April 8, 1925

B449,740 "STERLING," the initial letter being a dollar sign and the L in the center of the word representing the sign for the English pound sterling, with the word TRADE MARK in small letters in the upper loop—machine belting of rubber, gutta percha, balata, or containing these. Wm. Coulthard & Co., Ltd., Lonsdale street, Carlisle, Cumberland.

B449,741 "STERLING," the initial letter being a dollar sign and the L in the center of the word representing the sign for the English pound sterling, with the word TRADE MARK in small letters in the upper loop—machine belting of rubber, gutta percha, balata, or containing these. Wm. Coulthard & Co., Ltd., Lonsdale street, Carlisle, Cumberland.

453,409 MAHOGANITE—all goods in Class 40. American Hard Rubber Co., New York, N. Y., U. S. A. (Haseltine, Lake & Co., 28 Southampton Buildings, London, W. C. 2.

456,364 PRADS—boot protectors, some employing rubber. Blakey's Boot Protectors, Ltd., Armley Malleable Ironworks, Modder Place, Armley, Leeds.

Published April 15, 1925

450,209 STANCO—carbon black. The Standard Carbon Co., Boston, Massachusetts, U. S. A. (Marks & Clerk, 57-58 Lincoln's Inn Fields, London, W. C. 2).

455,858 Representation of an elephant with up-curved trunk and open mouth. Hot water bottles included in Class 40. Campbell, Achnach & Co., Ltd., 59 Wallace street, Glasgow.

456,858 TIT-BIT—boot protectors and studs, some employing rubber. Blakey's Boot Protectors, Ltd., Armley Malleable Ironworks, Modder Place, Armley, Leeds.

Published April 22, 1925

446,340 MAPAD—rubber hand stamps for outline maps, etc. John Bourn, 33 Alkham road, London, N. 16.

452,710 Two oblong placards, one bearing the word RUSTINES diagonally across its center and in addition the words: INSTANTANEOUS REPAIRING OF INNER TUBES. NEW METHOD. APPLIED WITHOUT SOLUTION, WITHOUT PETROL, WITHOUT ANYTHING; the other placard bears instructions for making the repairs, and in addition the words: IF YOU ARE SATISFIED WITH "RUSTINES" LET THEM BE KNOWN TO YOUR FRIENDS. YOU WILL DO THEM A GOOD TURN AND HELP US IN THE MEANTIME. THANK YOU—repair outfits for tires, included in Class 50. Louis Rustin, 16 Rue du Bois, Clichy-la-Garenne, Seine, France.

454,739 A placard, on the upper part of which is a triangular figure bearing the words: MOSELEY "FLOAT-ON-AIR" CUSHION SPECIALTIES; below this and tangent to the apex of the triangle is a diamond-shaped figure surrounded by the firm name and address and having at the center a representation of a lion rampant holding a battle axe—rubber inflatable cushions. David Moseley & Sons, Ltd., Chapel Field Works, Ardwick, Manchester.

455,402 LAWNPHALT—material for tennis court surfaces, made of bitumen, rubber latex, sawdust, and flax or hemp. John Cooke, Little Royd, Queens Mill road, Huddersfield.

456,046 CROYDEX—rubber hot water bottles, teapot spouts and rubber gloves, included in Class 40. The New Croyden Rubber Co., 107 Southwark street, London, S. E. 1.

456,047 CROYDEX—tubular hose. The New Croyden Rubber Co., 107 Southwark street, London S. E. 1.

Published April 29, 1925

448,912 A mottled background outlined in diamond shape and bearing at its center the representation of a group of balloons on strings converging at a common point, the letters O A K being conspicuously displayed, and crossing the diamond horizontally the words: OAK BRAND TOY BALLOONS, and at the bottom of the design the words: RAVENNA, OHIO—toy balloons. The Oak Rubber Co., Ravenna, Ohio, U. S. A. (Albert L. Mond, 19 Southampton Buildings, Chancery Lane, London, W. C. 2).

456,894 STAEBC, in script—electric insulators included in Class 16. The New Eccles Rubber Works, Ltd., Monton Road, Eccles, Lancashire.

457,111 EBOLITE—electrical insulating materials made wholly or principally of rubber. S. G. Leach and Co., Ltd., 26-30 Artillery Lane, London, E. 1.

Designs

The United States

67,037 TIRE. Term 14 years. K. B. Kilborn, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio.

67,082 TIRE TREAD. Term 3½ years. A. H. Gruber, Ludington, Michigan.

67,154 TIRE TREAD. Term 14 years. S. S. Miller, assignor to The Mohawk Rubber Co., both of Akron, Ohio.

67,166 TIRE TREAD. Term 3½ years. F. R. Talbott, assignor to The Talbott Rubber Co., both of Cleveland, Ohio.

67,309 TIRE TREAD. Term 14 years. J. A. Scheid, Roxborough, Pennsylvania.

The Dominion of Canada

6,647 TIRE. Consolidated Rubber Co., Ltd., Montreal, Quebec.

Report of Rims Inspected and Approved by Tire & Rim Association

Size	April, 1925		First 4 Months 1925	
Clincher Rims	Number	Per Cent	Number	Per Cent
24 x 3	1,038	0.0	5,073	0.1
26 x 3	11,955	0.4	40,647	0.5
28 x 3	.....	...	607	0.0
30 x 3	36,353	1.3	110,885	1.3
30 x 3½	364,753	13.2	1,907,798	21.5
31 x 4	104,901	3.8	355,758	4.0
Straightside Rims (Pass.)				
27 x 3½	692	0.0	1,318	0.0
28 x 3½*	1,113,213	40.4	2,438,819	27.5
29 x 3½*	2,658	0.1	141,970	1.6
30 x 3½	96,084	3.5	318,467	3.6
32 x 3½	1,660	0.1	5,449	0.1
28 x 4*	313,395	11.4	983,566	11.1
29 x 4*	109,686	4.0	420,905	4.7
30 x 4*	61,134	2.2	229,979	2.6
31 x 4	.....	...	1,393	0.0
32 x 4	23,486	0.9	91,452	1.0
33 x 4	1,486	0.1	3,206	0.0
34 x 4	.....	...	300	0.0
29 x 4½*	73,614	2.7	198,064	2.2
30 x 4½*	98,298	3.4	412,886	4.7
31 x 4½*	50,346	1.8	170,396	1.9
32 x 4½	71,920	2.6	243,596	2.7
34 x 4½	15,501	0.6	52,448	0.6
30 x 5*	38,610	1.4	119,548	1.3
31 x 5*	42,013	1.5	178,495	2.0
33 x 6*	1,848	0.1	7,621	0.1
Truck Rims				
30 x 5	78,137	2.9	279,062	3.1
34 x 5	11,104	0.4	47,812	0.5
32 x 6	15,642	0.6	59,132	0.7
36 x 6	5,441	0.2	20,497	0.3
34 x 7	2,780	0.1	9,218	0.1
38 x 7	2,292	0.1	3,650	0.0
36 x 8	2,760	0.1	5,789	0.1
40 x 8	2,205	0.1	4,752	0.1
40 x 10	.....	...	196	0.0
44 x 10	.....	...	205	0.0
Total	2,755,005	100.0	8,870,959	100.0

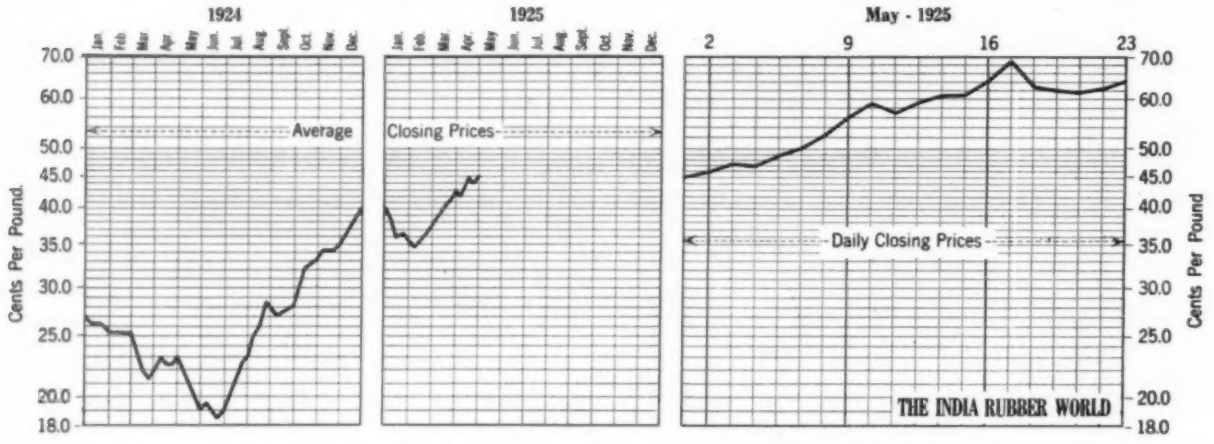
*Balloon casings.

NOTE.—In April 69 per cent of all rims produced were for balloon tires. Of the remaining 31 per cent, 18.3 per cent were clinchers, 4 per cent were motorcycle rims, and 4.5 per cent were truck rims.

BATAVIA'S CRUDE RUBBER EXPORTS TO AMERICA

During 1924 Batavia's exports to the United States of various commodities reached a total value of $22,000,000, while shipments of crude rubber accounted for $9,053,800 of this total. According to *Commerce Reports*, this figure represented an increase over 1923 in both quantity and value, in keeping with the growing production of rubber in Java and the increasing demand in the United States. The 1924 shipment totaled 38,167,800 pounds, as compared with 32,773,600 pounds in 1923, value $8,009,000.

DURING THE PAST YEAR THE UNITED STATES EXPORTED 680,346 pairs of rubber boots, value $1,591,772; and 1,681,042 pairs of rubber shoes, value $1,374,548. The development of this trade is indicated by comparison with the figures for the year 1922: 241,919 pairs of rubber boots, value $630,549; rubber shoes, 863,559 pairs, value $751,486.



Ratio Graph of New York Closing Prices of Spot Ribbed Smoked Sheets

Review of the Crude Rubber Market

New York

THE crude rubber market during May brought consuming interests to a sharp realization of the world shortage of rubber in spot and nearby positions. Under the operation of the Stevenson plan of restriction prices have reached within 3 months the highest levels since April, 1918. The situation is the most difficult one for those manufacturers who are not safeguarded by adequate supplies under contract.

The last week in April the market opened dull at 45 cents for ribs. Beginning May 1, the advance of the prices effective on that date caused a sharp advance in spot which was scarce and was bid up by a few buyers, although very little business resulted. From day to day as prices advanced the market became active, excited and firmer due to the scarcity of supplies. Buyers were not interested in positions beyond June and prices depended on what individual dealers would sell for. May 9 the markets in New York and London were described as "crazy" and trading was well nigh impossible.

Early in the second week of the month the price fell 2 cents on ribs but the buyers declined all offers as rapidly as they were made by the sellers. The drop in prices was quickly succeeded by an upward reaction originating in London and advancing the price to 64¼ cents at closing May 16, a rise of 7¼ cents within 5 days. Factory demand was steady for nearby, which was bought on every advance. There was no relief from the prevailing conditions and factories gradually turned their attention to futures, the prices of which will naturally come into line with spot.

The market the week ended May 16 was extremely firm, advancing 6 to 7 cents. There was no relief for nearby rubber. Factories resisted the advancing prices, which stiffened as buyers entered the market.

During the fourth week the highest price for spot ribs was 69, buyers, 69½, sellers, recorded May 18, the highest since April, 1918. Rubber was hard to get and there was little actual trading. A prompt reaction dropped the price by mid-week to 59½, buyers, 60, sellers. This decline was attributed to speculators unloading in London and New York. Rubber went into strong hands the last of the week and prices came back to 64 cents, buyers, 64½, sellers, in a steady market. Higher futures are expected to follow approaching those for spot.

The monthly record on ribbed smoked sheet futures shows as follows: May 1, 44¾, buyers, 45, sellers; May-June, 44½, buyers, 45⅝, sellers; July-September, 42¼, buyers, 42½, sellers; October-December, 41, buyers and sellers. May 23, 64, buyers, 64½, sellers; June-July, 63, buyers, 63½, sellers; July-September, 59, buyers, 60, sellers; October-December, 54¾, buyers, 55, sellers.

Parás have been in small supply at prices corresponding sympathetically with those of plantations. Balata remained steady, and neglected.

Importations of all grades during April, 1925, were 27,231 tons, compared with 42,436 tons one year ago. Plantation arrivals for April were 25,403 tons, compared with 41,438 tons one year ago. Total importations of plantation rubber for four months ended April 30 were 106,690 tons, compared with 108,035 tons for the

New York Spot Closing Rubber Prices

PRICES IN CENTS, PER POUND

PLANTATIONS	April, 1925														May, 1925								
	13	14	15	16	17	18	20	21	22	23	24	25	27	28	29	30	1	2	4	5	6	7	8	9
Sheet																								
Ribbed smoked	44⅛	44⅜	44⅜	44⅜	44	44½	44	44⅛	43¾	43¾	43⅞	44⅝	44⅝	45⅜	45¼	44⅞	45	45⅞	47¼	46⅞	48¾	50⅛	52½	55¼
Crêpe																								
First latex	44⅛	44⅞	44½	44⅜	44⅛	44⅝	44⅛	44¼	44	43⅞	43⅞	44⅛	44⅝	45⅜	45⅝	44¾	45	45⅞	47⅛	46⅞	48¾	50	51⅞	55¼
Off latex	44	44⅜	44	44¼	43⅝	44⅛	43⅝	43⅞	43½	43⅜	43⅜	43⅜	44		44⅜	44⅞	44¼	44⅜	45⅜	46½	46¼	48⅛	49⅝	51½	55¼
No. 2 blanket	43½	44¼	43¾	44	43⅜	43⅝	43½	43¼	42⅞	43	43⅛	43⅜	43⅜	44¼	44½	44⅛	44¼	45	46⅛	46¼	47⅞	49¼	51¼	54½
No. 3 blanket	43⅛	43¾	43⅜	43¾	43⅛	43¾	42⅞	43	42⅝	42¼	42⅞	43½	43½	44	44⅛	43⅞	44	44⅝	45¾	46	47⅝	48⅞	50⅞	54¼
No. 4 blanket	42¾	43½	43	43¾	42¾	43¼	42½	42⅝	42⅜	42½	42½	42¾	43½	43⅜	43¾	43⅝	43⅝	44⅜	45¾	45½	47½	48½	50⅜	53¾
Thin, clean brown	43¼	43⅞	43¾	43½	43	43¼	43	43	42½	42¼	42¾	43	43¾	44	44¾	44	44	44⅞	46	46	47¾	49	51	54¾
Specky brown	42⅝	43½	43⅛	43⅛	42½	42⅜	42½	42½	42	42¼	42⅜	42½	42⅛	43⅜	43⅞	43½	43½	44⅜	45½	45½	47¼	48⅝	50½	53⅜
Rolled brown	42⅜	42⅝	42⅛	42⅝	42	42⅜	41⅝	42⅛	41⅞	41¾	42	42⅞	42⅜	43	43¼	43⅛	43½	43⅜	45¼	44⅞	47⅜	48	50⅛	53¼

corresponding period of 1924. Total importations of all grades of rubber for the four months ended April 30 were 114,561 tons compared with 113,562 tons for the corresponding period of last year.

PLANTATION, May 1. Spot first latex crêpe, 44¾-45 cents; May, 44¾-45 cents; June-July, 44½-44⅝ cents; July-Sept., 42¼-42½ cents; Oct.-Dec., 41 cents.

May 23. Spot first latex crêpe, 64½ cents; June, 64½-65½ cents; July, 62½ cents; Aug.-Sept., 59 cents; Oct.-Dec., 54½ cents.

May 1. Spot ribbed smoked sheets, 44¾-45 cents; May, 44¾-45 cents; June-July, 44½-44⅝ cents; July-Sept., 42¼-42½ cents; Oct.-Dec., 41 cents.

May 23. Spot ribbed smoked sheets, 65 cents; June, 65-66 cents; July, 63 cents; Aug.-Sept., 60 cents; Oct.-Dec., 55 cents.

May 1. Spot No. 2 amber crêpe, 44½-44¾ cents; May, 44½-44¾ cents, June-July, 43¼-43½ cents; July-Sept., 40½-40¾ cents; Oct.-Dec., 39½-39¾ cents.

May 23. Spot No. 2 amber crêpe, 65½ cents; June, 64½ cents; July, 60 cents; Aug.-Sept., 57½ cents; Oct.-Dec., 52½ cents.

May 1. Spot No. 1 rolled brown crêpe, 43½-43¾ cents; May, 43½-43¾ cents; June-July, 42½-42¾ cents; July-Sept., 40-40½ cents; Oct.-Dec., 39½-39¾ cents.

May 23. Spot No. 1 roll brown crêpe, 62½ cents; June, 62½ cents; July, 61 cents; Aug.-Sept., 59 cents; Oct.-Dec., 51 cents.

SOUTH AMERICAN PARAS AND CAUCHO. May 1. Spot, upriver fine, 37¾ cents; islands fine, 33 cents; upriver coarse, 31½ cents; Cametá, 17½ cents; caucho ball, 33 cents.

May 23. Spot, upriver fine, 48 cents; islands fine, 44 cents; upriver coarse, 40 cents; Cametá, 38 cents; caucho ball, 38-40 cents.

London

The London market began the month dull at 21¼*d*, sellers. Prices quickly passed 22*d*, the highest in 5 years. There was very little spot to sell and spot ribs were at a premium of ½*d* over crêpe. On the ninth of the month the advance reached 26⅛ *d* and the market was greatly excited. This condition continued as the advance progressed, reaching 35¼*d* May 18, the highest level since April, 1918. This rise was succeeded by a sudden drop on the following day attributed chiefly to liquidation, leaving the market erratic with prices declining.

The weekly reports of London stocks show an increasingly rapid rate of decline over the records for April. The weekly stocks for May were as follows: May 4—11,720 tons; May 11—9,886 tons; May 18—7,567 tons; May 25—6,500 tons.

Singapore

The course of the Singapore market was influenced by keen speculative interest in all rubber positions and prices advanced correspondingly with the gains in London and New York. About the middle of the month the market became easy after realizing sales, followed by continued advance at fluctuating values due to speculation. The upward market was halted at 29⅜*d* by speculative selling, following which prices declined and became steadier.

Comparative Low and High New York Spot Rubber Prices

	May					
PLANTATIONS	1925*		1924		1923	
First latex crêpe	$0.44¾ @	$0.69½	$0.18 @	$0.23⅜	$0.26½ @	$0.32
Smoked sheet, ribbed	.44¾ @	.68½	.18⅝ @	.22⅝	.26½ @	.32
PARAS						
Upriver, fine	.37¾ @	.57	.18¼ @	.21½	.26 @	.28
Upriver, coarse	.31 @	.45	.13¾ @	.16½	.21½ @	.25½
Islands, fine	.33 @	.48	.15½ @	.18	.23½ @	.26
Islands, coarse	.....		.11 @	.11½	.14 @	.23
Cametá	.17½ @	.28	.10½ @	.11½	.14 @	.15½

*Figured to May 23, 1925.

New York Spot Closing Rubber Prices

PRICES IN CENTS, PER POUND

PLANTATIONS	May, 1925											
	11	12	13	14	15	16	18	19	20	21	22	23
Sheet												
Ribbed smoked	59	57	59¼	60¾	60⅞	64¼	69⅛	63	61¾	60⅜	61⅞	65
Crêpe												
First latex	58⅜	55¾	58⅜	59⅞	60½	62⅜	67⅝	62	60	59½	60¼	63¼
Off latex	57¾	54⅞	57½	59	59½	62½	66⅞	61½	59⅜	58¾	59⅜	63½
No. 2 blanket	58¼	55¼	57¾	58⅝	58⅞	62¼	66⅜	60¾	58⅞	58⅜	59⅜	61⅜
No. 3 blanket	57⅜	55	57⅜	58½	58½	61¾	66	60½	58¼	57⅝	58⅝	60⅞
No. 4 blanket	57⅛	54⅜	56½	57⅜	57¾	61	65½	59⅜	57¾	57½	58¼	59⅞
Thin, clean brown	57⅝	54⅞	57¼	58⅛	58½	62⅛	66⅜	60⅜	58¾	58	58¾	61¼
Specky brown	57⅛	54⅜	56¾	57⅝	57¾	61	65⅛	59⅜	58⅛	57⅛	58¼	60
Rolled brown	56¾	54¼	56½	57	57¼	60⅞	64⅛	59⅛	57⅛	56⅜	57¼	59⅜

New York Quotations

Following are the New York spot rubber quotations, for one year ago, one month ago, and May 23, the current date:

Plantation Hevea	May 24, 1924	April 25, 1925	May 23, 1925
Rubber latex (Hevea) *per gal.*	$1.25@	$1.75@$2.00	$2.40@
CREPE			
First latex	.19¾@.20	.44¼@	.64 @.64½
Off latex	.19 @	.44 @	.63¾@.64
Amber No. 2	.18¾@	.43½@	.63 @
Amber No. 3	.18¼@	.43¼@	.62¾@
Amber No. 4	@	.43 @	.62½@
Brown, clean, thin	.18¾@	.43½@	.63 @
Brown, specky	.18 @	.43 @	.62½@
Brown, roll	.17¾@.18	.42½@	.61 @.62
Sole crêpe	.45 @.48	.48½@	.63 @
SHEET			
Smoked, ribbed	19¼@.19⅜	.44 @	.64½@.65
East Indian			
PONTIANAK			
Banjermassin	@	.08 @	.07 @.08½
Palembang	@	.08½@	†.09 @
Pressed block	@	.13¾@.14	.14 @
Sarawak	.06¾@	.08 @	.08½@
South American			
PARAS			
Upriver, fine	.19 @.19½	.37¼@	.48 @
Upriver, fine	*.25¼@	*.48½@	*.64 @
Upriver, medium	.17½@.18	.35 @	.45 @
Upriver, coarse	.13½@.13¾	.31 @	.40 @
Upriver, coarse	*.22½@	*.44 @	*.59 @
Islands, fine	.18 @	@	.44 @
Islands, medium	.16 @	@	@
Islands, coarse	.11¼@	@	@
Cametá	.11½@	@	@
Acre Bolivian, fine	.19½@	.37½@	.50 @
Acre, Bolivian, fine	*.25½@	*.49 @	*.64 @
Beni Bolivian	.20 @	.37½@	@
Madeira, fine	.21 @	.38 @	.50 @
Peruvian, fine	.18 @.18½	@	@
Tapajos, fine	.18 @.18½	.36 @	@
CAUCHO			
Upper caucho ball	.13 @.13¾	.32 @	.40 @
Upper caucho ball	*.22½@	*.44½@	*.59 @
Lower caucho ball	.12 @.12¾	.31 @	.38 @
Maniçobas			
Ceará negro heads	.19 @	.30 @	.40 @
Ceará scrap	.08 @	.24 @	.19 @
Maniçoba 30% guaranty	.16 @	.30 @	.35 @
Mangabeira, thin sheet	.20 @	.27½@	.40 @
Centrals			
Central scrap	@	.32 @	†.37 @
Central wet sheet	@	.25 @	†.30 @
Corinto scrap	@	.32 @	.37 @.38
Esmeralda sausage	@	.32 @	.38 @.39
Guayule washed and dried	.23 @	.35 @	.43 @
Africans			
Black Kasai	†.17 @	.38 @	.57 @
Black Upper Congo	†.17 @	.37 @	.57 @
Red Upper Congo	†.18 @	.36 @	.52 @
Kasai Loanda	@	.36¼@	.53 @
Upper Congo Arumini	@	@	.55 @
Masai (Konakry)	@	.30½@	.55 @
Gutta Percha			
Gutta Siak	.16¼@	.17¼@.18	.17½@.18
Gutta Soh	.28 @	.28 @	.28 @.30
Red Macassar	3.00 @	3.00 @3.50	3.00 @3.75
Balata			
Block, Ciudad Bolivar	.62 @	.67 @	.66 @.67
Colombia	.53 @	.55 @	.54 @.55
Panama	.53 @	.54 @	†.54 @
Surinam, sheet	.70 @	.77 @	.78 @
amber	.74 @	.83 @	.85 @.86
Chicle			
Honduras	‡.58 @.68	‡.58 @.68	‡.58 @.68
Yucatan, fine	‡.58 @.68	‡.58 @.68	‡.58 @.68

*Washed and dried crêpe. Shipment from Brazil.
‡Duty paid.
†Nominal.

Reclaimed Rubber

The pronounced scarcity of spot crude rubber and its rapid rise in price have created a strong, sudden demand for reclaim rubber, the stocks of which were rapidly depleted.

The present problem of reclaimers is how to make deliveries on orders in excess of their capacity. Rarely have reclaimers been forced by demand for their product to operate their plants as at present, day and night, without cessation. Notwithstanding this insistent demand prices are well controlled. Advances over last month's quotations are very moderate due largely to the over-supply of scrap tires.

Quotations given below are nominal in view of the strong upward tendency in crude rubber.

New York Quotations

May 23, 1925

Auto Tire			
Black	lb.	$0.09¼ @	$0.09¾
Black, washed	lb.	.10¾ @	.11½
Black, selected tires	lb.	.11¼ @	.11¾
Dark gray	lb.	.10¾ @	.11
Light gray	lb.	.13 @	.13¼
White	lb.	.15¾ @	.16
High Tensile Black			
Super-reclaim, No. 1	lb.	.20½ @	.21
No. 2	lb.	.13½ @	.14
Shoe			
Unwashed	lb.	.09 @	.09¼
Washed	lb.	.12¾ @	.13
Tube			
No. 1	lb.	.17 @	.17¾
No. 2	lb.	.13 @	.13½
Uncured Tire Friction			
No. 1	lb.	.40 @	.45
No. 2	lb.	.30 @	.35
Miscellaneous			
High grade, red	lb.	.15 @	.15½
Truck tire	lb.	.09 @	.09½
Mechanical blends	lb.	.07 @	.08

British Malaya

Rubber Exports in April

An official cablegram from Singapore to the Malay States Information Agency, London, states that the rubber exported from British Malaya in April totaled 22,414 tons. The amount of rubber imported was 11,750 tons, of which 9,704 tons were declared as wet rubber.

The following are comparative statistics:

	1924		1925	
	Gross Exports Tons	Foreign Imports Tons	Gross Exports Tons	Foreign Imports Tons
January	23,844	8,867	19,183	10,132
February	19,395	7,440	21,622	10,071
March	22,294	8,269	26,836	13,399
April	20,551	7,909	22,414	11,750
Totals	86,084	32,485	90,055	45,352

Distribution

Destination	March, 1925 Tons	April, 1925 Tons
United Kingdom	2,616	1,729
United States of America	20,716	17,526
Continent of Europe	2,236	2,131
British Possessions	443	244
Japan	813	752
Other Foreign Countries	12	32
Totals	26,836	22,414

Dealers' Stocks of Rubber

The Malay States Information Agency, 88 Cannon Street, London, E. C. 4, England, has received a cablegram stating that dealers' stocks of rubber in Singapore on April 30 last amounted to 13,552 tons and in Penang 1,816 tons.

IMPORTANCE OF JAPAN IN AMERICAN EXPORT TRADE

According to *Commerce Reports*, Japan ranked during 1924 as the fifth largest market for United States exports, such exports representing more than one-half the value of the total American shipments to the Far East. Japan ranks fourth among the countries of the world as an importer of various American goods, including rubber shoes.

The Market for Rubber Scrap

Under the influence of the strong demand for reclaimed rubber the movement of all scrap grades has gained in volume, particularly on the better qualities. On the better grades quotations have advanced moderately during the month. Further advances may be expected as crude rubber advances.

BOOTS AND SHOES. This grade, formerly the leading quality, is now in second place as to tensile properties and although a standard moves but slowly compared with tires and tubes. Advances in price are slight and fractional over last month.

INNER TUBES. The demand has markedly increased for inner tubes. No. 1 advanced a half cent a pound. No. 2 and red a quarter of a cent, and mixed, one-eighth cent only over last month.

MIXED TIRES. Mixed tires have been in demand at all reclaiming centers, creating a well defined increase in movement over last month. Both mixed and white tires with beads have advanced about $1.00 a ton. Beadless tires, mixed peelings and mixed motor truck grades are quoted unchanged.

HOSE AND MECHANICALS. Both these grades are without present interest and unchanged in price.

Quotations for Carload Lots

May 23, 1925

Boots and Shoes			
Boots and shoes, black	lb.	$0.02½ @	$0.02¼
Red and white	lb.	.01¾ @	.01⅞
Trimmed arctics, black	lb.	.01⅞ @	.01¾
Untrimmed arctics	lb.	.01¾ @	.01½
Tennis shoes and soles	lb.	.01 @	—
Hard Rubber			
No. 1 hard rubber	lb.	.11 @	.12
Battery jars, black compound	lb.	.02 @	.03
Inner Tubes			
No. 1 floating	lb.	.06 @	.06¼
No. 2, compounded	lb.	.03¾ @	.03⅞
Red	lb.	.03¼ @	.03⅜
Mixed tubes	lb.	.03¾ @	.03⅝
Mechanicals			
Mixed black scrap	lb.	.01 @	.01¼
Heels	lb.	.00½ @	.00¾
Hose, air-brake	ton	20.00 @	22.00
regular	ton	17.00 @	20.00
No. 1 red	lb.	.02 @	—
No. 2 red	lb.	.01¼ @	—
Red packing	lb.	.00¾ @	—
White, druggists' sundries	lb.	.02½ @	—
Mechanical	lb.	.01 @	—
Tires			
Pneumatic Standard—			
Mixed auto tires with beads	ton	20.00	@21.00
Beadless	ton	25.00	@26.00
White auto tires with beads	ton	22.00	@24.00
Beadless	ton	36.00	@40.00
Mixed auto peelings	ton	30.00	@35.00
Solid—			
Mixed motor truck, clean	ton	35.00	@41.00

FOOTWEAR EXPORTS TO AUSTRIA AND DENMARK

Although England during the past year has been the leading market for American-made rubber boots and shoes, other countries have also been large purchasers, particularly Austria and Denmark. The total amount of rubber boots exported to Austria during the year was 59,380 pairs, value $110,450. The figure for rubber shoes was much higher, 224,054 pairs, value $213,167.

Denmark's total purchase of shoes, 110,994 pairs, was approximately half that taken by Austria, but the value, at $78,877, was correspondingly less. Denmark bought during 1924 38,170 pairs of rubber boots, value $93,246. In the case of both countries importations were much heavier during the last half of the year, Austria for example taking in September 102,467 pairs of shoes, value $55,351, and in August 44,059 pairs of boots, value $85,608. Denmark's largest purchase also occurred in September, 44,024 pairs of shoes, value $22,107.

The Market for Chemicals and Compounding Ingredients

New York

THE chemical market, in general, during the past month has been steady and routine with increase of activity in a few lines and improved outlook for all. A two-ton shipment of German litharge of high quality which arrived in New York late in April was reported shipped to consumers in the rubber trade for experimental purposes. Further importations are not now contemplated because the foreign material cannot compete in price with American litharge at the present time.

ACCELERATORS. All those accelerators now established in current rubber manufacturing practice are in steady demand. The various ultra-accelerators are gaining in popular estimation as their technical value becomes more appreciated, particularly in specific lines of rubber goods.

BENZOL. The market continues unsettled. Instances are reported of prices cut below quotation levels.

CARBON BLACK. The carbon black market seems definitely to have recovered from its slump of April and two fractional advances were named and sustained during the past month. The strength of the market was attributed to the sharp increase in buying of the rubber industry.

Prices are holding firm at 7 cents a pound for bagged stock. Local, small spot lots in cases are bringing 11 cents. Scheduled contract deliveries to rubber manufacturers show no falling off in demand and the outlook for continued brisk business is very good.

CLAYS. Manufacturers of rubber compounding clays report heavy routine shipment of stocks against contracts and continued development of new business in general mechanical and other lines as well as in tires.

LITHARGE. An increase of interest on the part of rubber manufacturers is reported. Fairly large withdrawals on contracts have been made. There were no price changes during the month.

SOLVENT NAPHTHA. Prices are firmer and steady at former price levels with the demand active.

SUBLIMED LEAD. Prices firm and unchanged. The slight advance in pig lead quotations has stiffened the market tone somewhat.

WHITING. All grades are at very low prices and in steady routine shipment.

ZINC OXIDE. Increased business from the rubber industry is a strong factor in the well maintained demand for zinc oxide. Price levels remain unchanged. Most of the business consists of deliveries on standing contracts.

New York Quotations

May 23, 1925

Accelerators, Inorganic

Lead, carbonate	lb.	$0.10¼	@
Lead, red	lb.	.11¼	@
sublimed blue	lb.	.10¼	@
sublimed white	lb.	.10¼	@
Lime, flour	lb.	.01¼	@ $0.2½
R. M. (factory)	lb.	.01¼	@
R. M. hydrated	ton	15.00	@
superfine	lb.	.01½	@ 0.02
Litharge	lb.	.11½	@ .12½
Magnesia, carbonate	lb.	.07¾	@
calcined, light (bbls.)	lb.	.24	@ .40
calcined, ex. light (bbls.)	lb.	.40	@ .45
calcined, md. light (bbls.)	lb.	.15	@
calcined, heavy (bbls.)	lb.	.04½	@ .06½
magnesium, carbonate, light	lb.	.07	@ .07½
Orange mineral A.A.A.	lb.	.14	@
Rubber lead	lb.	.11	@

Accelerators, Organic

A-7	lb.	.75	@ .85
A-19	lb.	.85	@ .95
Accelemal	lb.	.30	@
Aldehyde ammonia powder	lb.	.93	@
Anhydro formaldehyde aniline	lb.	.38	@
Anhydroformaldehyde-para-toluidine	lb.	.90	@
Aniline (factory)	lb.	.17	@
sulphate	lb.		@
Benzidine (base)	lb.	.76	@
Benzyl aniline	lb.	.70	@
Cryline	lb.		@
paste	lb.		@
powder	lb.		@
D. P. G. salt	lb.	.89	@
Diethyl amine	lb.	2.20	@
Dimethyl amine	lb.	2.70	@
Dimethylaniline	lb.	.35	@
Di-ortho-tolylguanidine	lb.	1.13	@
Di-ortho-tolylthiourea	lb.	.30	@
Diphenyl guanidine	lb.	.98	@
Ethyl aniline	lb.	1.00	@
Ethylidene aniline	lb.	.65	@
Ethyl-o-toluidine	lb.	1.00	@
Excellerex	lb.	.30	@ .35
Formaldehyde aniline	lb.	.42½	@
Heptene	lb.		@
Hexamethylene tetramine	lb.	.82½	@
Lead oleate (fact'y)	lb.	.18	@
Methylene aniline	lb.	.31	@ .38
Methylenedianilide	lb.	.40	@
No. 999	lb.	.17	@
Shawinigan paraldehyde	lb.		@
Para-nitrosodimethylaniline	lb.	.99	@
Paraphenylene diamine	lb.	1.25	@ 1.30
Quinodine	lb.		@
Super-sulphur, No. 1	lb.	.50	@ .55
No. 2	lb.	.20	@ .30
Tensilac No. 39	lb.	80	@
No. 40	lb.	.75	@
Thiocarbanilide	lb.	.25	@ .31
Trimene	lb.		@
Trimene base	lb.		@
Triphenylguanidine	lb.	.73	@
Tuads	lb.	$5.00	@
Vulcone	lb.	.84	@
Zimcate	lb.	5.00	@

Acids

Acetic 28% (bbls.)	100 lb.	$3.12	@ $3.38
glacial (carboys)	lb.	.16	@
Creasylic (95% straw color)	gal.	.62	@ .64
(95% dark)	gal.	.58	@ .60
Sulphuric, 66° (carboys)	lb.	.02	@

Alkalies

Caustic soda	100 lbs.	3.10	@ 4.56
flake, 76% (factory)	100 lbs.	3.60	@ 4.31
solid, 76% (factory)	100 lbs.	3.20	@ 3.91

Colors

BLACK			
Bone	lb.	.08	@ .10
Carbon:			
A. & W. nonfli	lb.	.40	@
Aerfloted arrow	lb.	.07	@ .11
Compressed	lb.	.07½	@ .11½
Uncompressed	lb.	.07	@ .11
Micronex	lb.	.08	@ .12
Lampblack	lb.	.10	@ .14
Shawinigan	lb.		@
Thermatomic carbon	lb.	.04	@
BLUE			
Cobalt	lb.	.20	@ .25
A. & W. blue	lb.	2.00	@ 4.00
Prussian	lb.	.35	@ .40
Ultramarine	lb.	.10	@ .35
BROWN			
Iron oxide	lb.	.04	@ .05
Sienna, Italian	lb.	.06	@ .07½
Umber, Turkey	lb.	.04½	@ .05
GREEN			
Chrome, light	lb.	.27	@ .29
medium	lb.	.29	@ .30
dark	lb.	.31	@ .34
commercial	lb.	.10	@ .10½
tile	lb.		@
A. & W. green	lb.	2.00	@ 3.00
Oxide of chromium	lb.	.34	@ .51
T. K	lb.	.40	@ .45
RED			
Antimony, golden	lb.		@
golden T. K	lb.	.18	@ .22
golden R.M.P. No. 7	lb.	.20	@
golden pentasulphide, T. K	lb.	.33	@ .35
golden, 15/17% G. E.	lb.	.20	@ .25
golden, 15/17% F. S.	lb.		@
golden, No. 1	lb.	.25	@
golden, No. 2	lb.	.17	@
Antimony, crimson	lb.		@
crimson T. K	lb.	.45	@ .50
crimson, 15/17% G. E.	lb.	.35	@ .40
crimson, 15/17% F. S.	lb.		@
crimson, R.M.P. No. 3	lb.	.50	@
crimson F	lb.		@
7-A	lb.	$0.35	@
Z-2	lb.	.20	@
Vermilion, 5% F. S.	lb.	.65	@
Antimony			
Vermilion 15/17% F.S.	lb.	$0.50	@
Arsenic, red-sulphide	lb.		@
A. & W. red (4 shades)	lb.	1.50	@ $3.00
purple	lb.	2.00	@ 3.00
Iron oxides			
domestic	lb.	.12	@
English	lb.	.11½	@
English Indian	lb.	.10	@ .11
Indian, pure	lb.	.05	@ .11
pure bright	lb.	.11	@ .14
reduced	lb.	.07	@ .10
Spanish	lb.	.02¾	@ .04
Levigated, waterfloated	lb.		@
Venetian	lb.	.02	@ .05½
Oximony	lb.	.13¼	@
Para toner	lb.	.90	@ 1.00
Toluidine toner	lb.	1.80	@ 2.05
Vermilion, English	lb.	1.35	@
quicksilver	lb.	1.50	@ 1.65
WHITE			
Akcolith	lb.		@
Albalith	lb.	.06¾	@ .06½
Aluminum bronze	lb.	.55	@ 1.20
Lithopone	lb.	.06	@
Sterling	lb.	.06½	@ .06½
Azolith	lb.	.06½	@ .06½
Imported prime	lb.	.07	@ .07¼
Red seal, imported	lb.		@
T. O. pigment	lb.	.15	@ .17
Zinc oxide			
AAA, lead free	lb.	.08	@ .08¼
Azo (factory):			
ZZZ (lead free)	lb.	.07¼	@ .08¼
ZZ (5% leaded)	lb.	.06½	@ .07¼
Z (8.10% leaded)	lb.	.06½	@ .07¼
French process, Florence brand			
Green seal	lb.	.10¼	@ .11¼
Red seal	lb.	.09¼	@ .10¼
U. S. P.	lb.	.15	@ .16½
White seal	lb.	.11¼	@ .12¼
Horse Head brands			
Selected	lb.	.08½	@ .08¼
Special	lb.	.08½	@ .08¼
XX red	lb.	.08	@ .08¼
Leaded brands			
Lehigh	lb.	.07¼	@ .07¼
Standard	lb.	.07¼	@ .07¼
Sterling	lb.	.07¼	@ .07¼
Superior	lb.	.07¼	@ .07¼
Palmerton process			
Kadox, black	lb.	.10¼	@ .11¼
blue	lb.	.09¼	@ .10¼
red	lb.	.08¼	@ .09¼
Snow white	lb.		@
YELLOW			
Arsenic	lb.	.65	@ .75
Chrome	lb.	.18	@ .20
A. & W. yellow	lb.	2.50	@ 4.00
India rubber	lb.		@
Ochre, domestic	lb.	.02	@ .02½
imported	lb.	.03	@ .03½

Compounding Ingredients

Aluminum flake (sacks C. L.)	ton	$21.85	@
(sacks L. C. L.)	ton	24.50	@
Ammonia carbonate	lb.	.13½	@ .15
Asbestine	ton	13.00	@25.00
Aluminum silicate	ton	25.00	@30.00
Barium, carbonate (bbl.)	ton	54.00	@56.00
dust	lb.	.05	@ .06
Barytes, imported white	ton	30.00	@35.00
pure white	ton	30.00	@35.00
O.C.X., off color	ton		@
water ground and floated	ton	23.00	@26.00
Basofor	lb.	.04½	@
Blanc fixe	lb.	.03½	@ .04
Carrara filler (factory)	lb.	.01½	@
Chalk, precip. extra light	lb.	.04¼	@ .05
heavy (f.o.b. factory)	lb.	.03¼	@ .04
Clay, Dixie	ton	20.00	@35.00
Blue ribbon (C. L. fcty.)	ton	14.00	@
Blue Ridge, dark	ton	9.00	@
light	ton	12.00	@
Catalpo (facty.)	ton	35.00	@40.00
China	lb.	.01½	@
China, L. H. B.	ton	13.00	@22.50
English, L. H. B.	lb.	.02½	@ .02¾
Langford	ton	12.00	@
Cotton flock, black	lb.	.12	@ .13
light-colored	lb.	.12	@ .13
white	lb.	.15½	@ .23
Cotton linters clean mill-run	lb.	.05	@
Fossil flour (powdered)	ton		@
(bolted)	ton		@
Glue, high grade	lb.	.21	@ .29
medium	lb.	.19	@ .25
low grade	lb.	.15	@ .18
Graphite, flake	lb.	.06½	@ .12
Infusorial earth (pow'd)	lb.	.03½	@
(bolted)	ton		@
Lime (bolted)	lb.	.01½	@ .02
Mica, amber	lb.	.05	@
powdered	lb.		@
white	lb.		@
Pumice stone, powd.	lb.	.03	@ .05
Rotten stone (bbls.)	lb.	.02½	@ .04½
Slate flour (facty.)	ton	8.50	@15.00
Soap bark, cut	lb.	.09½	@ .09¾
Soapstone	ton	15.00	@25.00
Sodium bicarbonate (bbls.) 100 lbs.		2.00	@
Starch, powd. corn			
Buffalo (bbls.) 100 lbs			@
(bags) 100 lbs.			@
Talc, soapstone	ton	15.00	@22.00
Terra blanche	ton	25.00	@30.00
Whiting, domestic No. 33	ton	10.00	@
chalk, L. H. B.	ton	16.00	@25.00
commercial (facty.) 100 lbs.		.90	@ 1.00
English, imported	lb.	.01¼	@
English, cliffstone (factory) 100 lbs.		1.50	@ 1.75
Georgia calcite	ton		@
gilders (bolted) 100 lbs.		1.25	@ 1.35
Nelco	ton	11.00	@22.50

Chemical Market—*Continued*

New York Quotations

May 23, 1925

Whiting			
Perfection	ton	$22.00	@$25.00
Quaker	ton	13.00	@15.00
Snowflake white	ton		@
Superfine	ton		@
Sussex	ton	8.00	@10.00
Witco (C. L.)	ton	12.00	@
York	ton		@
Wood pulp, XXX (facty.)	ton	35.00	@
X (facty.)	ton	25.00	@
Mineral Rubber			
Genasco (facty.)	ton		@
Gilsonite	ton		@
Granulated M. R.	ton	35.00	@45.00
Hydrocarbon, hard	ton	29.00	@35.00
Hydrocarbon, soft	ton	29.00	@35.00
Mineral Flour	ton		@
Ohmlac Kapak, K-R	ton		@
K-4	ton		@
320/340 m. p. hydrocarbon	ton	47.00	@52.00
300/310 m. p. hydrocarbon	ton	42.00	@47.00
Pioneer, M. R., solid (fac.)	ton		@
M. R. granular	ton		@
Robertson, M. R., solid, (facty.)	ton	35.00	@75.00
M. R. (gran. facty.)	ton	42.00	@80.00
Paradura	ton	60.00	@62.50
Rubrax (facty.)	ton	60.00	@
Synpro, gran. M. R. (facty.)	ton		@
Resins and Pitches			
Tar, pine, retort	bbl.	15.00	@15.50
kiln	bbl.	15.00	@16.00
Pitch, Burgundy	lb.	.06½	@
coal tar	ton	30.00	@
Fluxol hardwood	lb.	.02	@ .05
pine tar	bbl.	15.00	@
ponto	lb.	.06½	@
Rosin, K (bbl.)	280 lbs.	11.70	@
strained (bbl.)	280 lbs.	11.55	@
Shellac, fine orange	lb.	.59	@ .60
substitute	gal.		@
Peanut, crude	lb.	.12½	@
refined	lb.	.15	@
Petrolatum, standard	lb.	.06	@ .08
Petrolatum, sticky	lb.	.08	@ .10
Pine, steam distilled	gal.	.62	@ .68
Rapeseed, refined	gal.	1.00	@
blown	gal.	1.15	@
Rosin	gal.	.50	@ .60
Soya bean	lb.	.13¼	@ .13¾
Tar	gal.	.28	@ .30
Woburn	lb.	.05	@
Oils (Softeners)			
Avoilas compound	lb.	.12	@ .13
Castor, No. 1, U. S. P.	lb.	.17	@
No. 3, U. S. P.	lb.	.16½	@
Corn, crude (bbls.)	lb.	.12½	@
Cotton, Summer yellow	lb.	.12	@

Oils (Softeners)—*Continued*

Cycline	gal.	$0.32	@$0.38
Glycerine	lb.	.19	@ .19½
Linseed, raw	gal.	1.10	@
Liquid rubber	lb.	.11	@
Palm lagos	lb.	.11½	@
clarified	lb.	.09½	@ .10
Palm, niger	lb.	.11	@
Parra M. R. flux	lb.	.06	@ .07

Solvents

Acetone (98.99%, [6.62 lbs. gal.])	lb.	.10	@ .11
Benzol (90%, 7.21 lbs. gal.) pure	gal.	.24	@ .29
Carbon bisulphide (10.81 lbs. gal.) 99.9% pure (drums)	lb.	.06½	@ .07½
tetrachloride (13.28 lbs. gal.) 99.7% pure (drums)	lb.	.07½	@
Gasoline			
No. 303			
Tankcars	gal.	.21½	@
Drums, C. L.	gal.	.24½	@
Drums, L. C. L.	gal.	.27½	@
Motor gas (steel bbls.)	gal.	.18	@
Naphtha, V. M. & P.	gal.	.20½	@
68° Bé., 122°, 324°	gal.	.19	@
70° Bé., 114°, 314°	gal.	.19½	@
71° Bé., 112°, 304°	gal.	.20	@
Turpentine, spirits	gal.	1.07	@
wood, steam distilled	gal.	.95	@

Substitutes

Black	lb.	.08	@ .15
Brown	lb.	.10	@ .15
White	lb.	.09	@ .16
Brown factice	lb.	.09	@ .15
White factice	lb.	.09½	@ .17

Vulcanizing Ingredients

Black hypo	lb.	.18	@
13% F. S.	lb.	.20	@
Ethyl chloride (drums)	lb.		@
Sulphur chloride (drums)	lb.	.04½	@ .05
Sulphur, soft rubber, 100% pure (C.L.)	100 lbs.	2.35	@ 2.60
(L.C.L.)	100 lbs.	2.65	@ 2.90
Sulphur, Brooklyn brands			
Refined velvet (bbls.)	100 lbs.	2.90	@ 3.15
(bags)	100 lbs.	2.65	@ 2.90
Superfine flour (bbls.)	100 lbs.	2.60	@ 2.90
(bags)	100 lbs.	2.20	@ 2.50
Rubber makers	100 lbs.	3.25	@

(See also Colors—Antimony)

Waxes

Wax, beeswax, white, com	lb.	.53	@ .65
ceresine, white	lb.	.10	@ .11
carnauba	lb.	.38	@ .40
montan	lb.	.06	@ .06½
ozokerite, black	lb.	.24	@ .25
green	lb.	.26	@ .30

Paraffin

122/124 white crude scale	lb.	.05¼ @
124/126 white crude scale	lb.	.05¼ @
120/122 fully refined	lb.	.05½ @
125/127 fully refined	lb.	.05¼ @

INCREASE IN CANADIAN TIRE AND TUBE EXPORTS

According to the Department of Commerce, Canada has exported during the first three months of the present year 208,012 casings, value $2,162,246; and 236,935 inner tubes, value $350,473; a large increase over the 125,628 casings and 123,319 inner tubes exported in the first quarter of 1924.

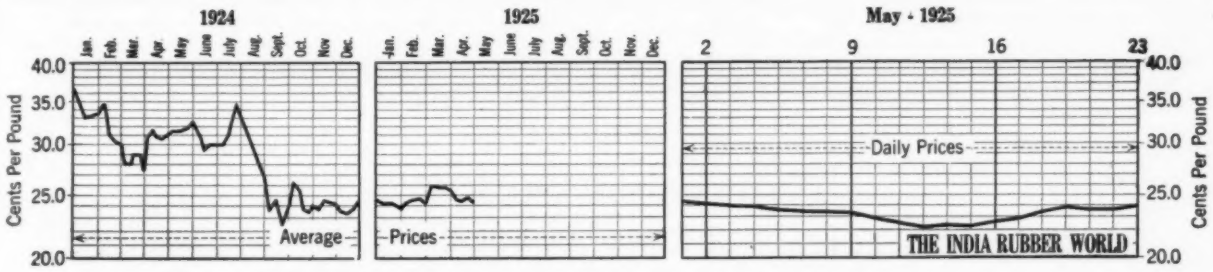
There is a striking advance also this year in the importations of these tires by certain individual countries, New Zealand, for example, taking 51,839 tires during the first quarter of 1925 as compared with 72,000 during the entire year 1924; the Straits Settlements, 10,682 casings, as against 10,273 for 1924; Denmark, 6,462, as compared with 6,341; or the United Kingdom, 33,690, as against 155,644 during 1924. Other important markets in 1925 were Argentina, 15,533 casings; South Africa, 12,573; Australia, 12,492; Brazil, 10,686; and British India, 10,155.

The best customers for inner tubes during the three months of 1925 were New Zealand, 42,668; Argentina, 32,511; United Kingdom, 28,069; Brazil, 26,227; British India, 13,866; Denmark, 12,876; British South Africa, 12,111; Australia, 11,886; and Uruguay, 7,189. Although all sorts of pneumatic casings, including motorcycle and bicycle, are included in one class in Canadian statistics, it can be safely estimated that motorcycle and bicycle casings constitute less than 10 per cent of the number of tires exported.

ANNUAL MEETING AMERICAN SOCIETY FOR TESTING MATERIALS

The twenty-eighth annual meeting of the American Society for Testing Materials will be held at Chalfonte-Haddon Hall, Atlantic City, New Jersey, during the week of June 22. Sessions of especial interest to the rubber industry will include the report, on June 24, of Committee D-11 on rubber products. F. M. Farmer, chairman. At this time will be discussed the development of performance tests of rubber products, including abrasion tests, accelerated aging test, flexing test for belting, and oil and gasoline test. Information specifications for rubber disks for fire alarm valves will also be submitted, as well as proposed revisions of tentative specifications for rubber insulating tape.

On June 26 the report of Committee D-13 on Textile Materials will be presented, while the organization of new sub-committees on narrow fabrics, rayon, and asbestos textiles will be discussed. On the same day the report of Committee D-9 on electrical insulating materials will be rendered.



Ratio Graph of New York Daily Prices of Spot Middling Upland Cotton

The Market for Cotton and Other Fabrics

New York

AMERICAN COTTON. Spot middlings declined steadily from 24.40 cents at the beginning of teh month to 22.20 on the 13th, which is as low as the lowest levels of September, 1924, and August, 1923. A slight upward reaction carried the price to 22.40 cents on the 14th, succeeded by a sag to 22.30 cents on the 15th. Since that date a swing upward has been in force advancing the price to 23.80 on the 20th, and to 23.95 on May 23.

The cotton market was largely influenced by news of the weather, discounting the current view that the crop is getting an early and favorable start on an area about five per cent greater than that of last season, and that any such increase in yield as compared with that of the last crop would mean a lower market. Government crop acreage figures are not due to be published until July 2 and will then give the acreage as of May 25.

ARIZONA COTTON. Old crop Pima cottons are exhausted. A much larger new crop is indicated from the greatly increased area now planted.

EGYPTIAN COTTON. Under conditions approximately normal these crops will be large. The present season's shortage of Sakellaridis will be remedied by increased acreage. The area under cultivation for all types of Egyptian cotton the coming season is estimated locally at 1,787,843 feddans (1 feddan equals 1.038 acres) compared with 1,588,100 feddans for the season just closed.

The small quantities of desirable stapled cottons of all kinds are tending to hold prices, but new crop staples are quoted at a huge discount, which tends to restrict business. Growing crops of staples everywhere are apparently in a sufficiently healthy condition to produce a largely increased yield over that of the last season.

May 2 quotations, c. i. f. Boston, on May-June shipments were: Medium Sakellaridis, 60½ cents; Medium Uppers, 38⅜ cents. May 9, the same shipments on these grades stood, respectively, at 65⅝ cents and 38⅜ cents. On May 23, May-June shipments of Medium Sakellaridis were quoted at 61½; Medium Uppers, 36 3/16 cents.

Cotton Fabrics

DUCKS, DRILLS AND OSNABURGS. More interest is now being shown by consumers in making provision for the needs of future months than has been evident for a month past. Values, however, do not show any appreciable gain even in the face of the very much firmer cotton market. There is a disposition among those best informed on conditions surrounding the staple in the South to regard cotton as in a somewhat dangerous condition because spots are difficult to secure except at a heavy premium of not less than 2 cents a pound over quoted Board prices for good grades. Further, there is no little difficulty in finding quantities of the grades desired, even at the premium named. These conditions would serve as a basis for a sharp advance in fabric prices in event of an active demand.

Users of cotton fabrics are operating unusually close to their absolute needs in the matter of supplies and replenishment. The mills are not accumulating heavy warehouse stocks against the future as in former years, having taken the cue for hand-to-mouth operation from the consumers.

SHEETINGS. Prices were reduced about the middle of the month and mills are holding firm at these quotations. Some business has been placed in the print cloths and some of the heavier weights but the volume was not large. Buyers are still covering only

New York Quotations

May 23, 1925

Drills

38-inch 2.00-yard	*yard*	$0.21 @
40-inch 3.47-yard		.12⅜ @
52-inch 1.90-yard		.22⅞ @
60-inch 1.52-yard		.28⅝ @

Duck

38-inch 2.00-yard	*yard*	.22½ @
40-inch 1.47-yard		.30⅝ @
72-inch 16.66-ounce		.50 @
72-inch 17.21-ounce		.51⅝ @
MECHANICAL		
Hose and belting	*pound*	.43 @
Specials		.47 @
TENNIS		
52-inch 1.35 yard	*yard*	.35¼ @

Hollands

DEAD FINISH		
Standard, 37-inch	*yard*	.19½ @
42-inch		.23½ @
RED SEAL		
36-inch		.18 @
40-inch		.19 @
50-inch		.30 @
FLAT FINISH		
Imperial, 36-inch		.15½ @
40-inch		.17½ @

Osnaburgs

40-inch 2.35-yard	*yard*	.19⅛ @
40-inch 2.48-yard		.18¼ @
40-inch 3.00-yard		.15 @
37-inch 2.42-yard		.18⅝ @

Raincoat Fabrics

COTTON		
Bombazine 64 x 60	*yard*	.13½ @
Bombazine 60 x 48		.12½ @
Plaids 60 x 48		.13 @
Plaids 56 x 44		.12½ @
Surface prints 60 x 48		.13½ @
Surface prints 64 x 60		.14½ @

Sheetings, 40-inch

40 x 48, 2.50-yard	*yard*	.15½ @ .15¾
48 x 48, 2.85-yard		.13⅛ @ .13½
64 x 68, 3.15-yard		.13¾ @ .14
56 x 60, 3.60-yard		.11¾ @ .11½
48 x 44, 3.75-yard		.10 @ .10¼

Sheetings, 36-inch

48 x 48, 5.00-yard	*yard*	$0.08 @ $0.08¼
40 x 40, 6.15-yard		.06½ @ .06¾

Tire Fabrics

SQUARE WOVEN 17¼-ounce		
Egyptian, karded	*pound*	.60 @ .65
Peeler, karded		.48 @ .50
CORD 23/3/3		
Egyptian, combed	*pound*	.75 @
Egyptian, karded		.60 @ .65
Peeler, combed, 1 1/16-in.		.80 @ .85
Peeler, karded, 1 1/16-in.		.50 @ .52
CORD 13/3/3		
Peeler, karded	*pound*	.45 @ .48
LENO BREAKER		
8-oz. Peeler, karded	*pound*	.48 @ .50
10-oz. Peeler, karded		.48 @ .49
CHAFER		
8.25-oz. Peeler, karded	*pound*	.56 @
9.5-oz. Peeler, karded		.49 @ .50
12-oz. Peeler, karded		.49 @ .50
14-oz. Peeler, karded		.46 @ .49

on actual requirements, and apparently this condition is liable to continue for an indefinite period.

TIRE FABRICS. Consuming demand for tire fabrics has ruled very quiet the past month. There has been a limited inquiry for small lots but buyers are unwilling to consider contracts for future requirements. In general, the market is slowly improving. Accumulations of square woven fabric are moving slowly and prices have fallen to about a third of the highest figures reached in the past 3 years. The extended use of balloon tires has not changed the requirements for the longer staple cottons.

The Cotton Outlook

American Acreage Estimated at 43,130,000

THE world's visible supply of cotton is still about a million bales more than a year ago, and both consumption and exports are beginning to decline somewhat. Several reliable private estimates forecast an increase in acreage in American cotton of 4 to 5 per cent over last year, or about 43,130,000 acres. With fair conditions the trade therefore anticipates a larger yield than the 13,600,000 bales from the current crop. This prospect has substantially modified the speculative and mercantile views regarding the probable worth of the new crop and the price of cotton available for the remainder of the crop year. Prices have declined about 5 per cent during the past month and cotton men are now viewing 20-cent cotton as possible before the crop movement gets under way. Consumption abroad has not kept pace with the large exports, so that the carryover abroad will be larger than last year.

Preparations for the coming crop are well advanced and average from normal to 10 days or more early in most states. Generally speaking, conditions are favorable except for the widespread absence of sufficient subsoil moisture, especially in the states west of the Mississippi River. With few exceptions most states are using more fertilizer than last year, especially in the western cotton states where little has been previously used. Much has been written about the shortage, but except in a few localities this would not be serious unless an unusual amount of cultivation is needed. In Texas it is not expected that weevil infestation will exceed that of last year, while in the Central and Eastern states it is feared that the mild winter may cause greater damage unless climatic conditions are such as to restrict the activity of the insects.

World Cotton Crop Now Estimated at 24,700,000 Bales

The latest revision of the data available to the Department of Agriculture indicates that the world's cotton crop harvested in the year beginning August 1, 1924, amounted to approximately 24,700,000 bales of 478 pounds each, as compared with 19,590,000 bales for the preceding year. Of the 1924 total, 13,619,000 bales are credited to the United States; 5,069,000 bales to India; 1,540,000 bales to Egypt, and 281,000 bales to Mexico.

Preliminary estimates of the world area planted to cotton for the crop year beginning in 1924 amount to 79,100,000 acres, as compared with 71,200,000 acres in the preceding year.

England Using More American Cotton

Statistics compiled by the International Federation of Master Cotton Spinners show that for the first half of the present season ended January 31, there was a large increase in consumption of American cotton, a slight decrease in consumption of Egyptian, a heavy decrease in consumption of East Indian, and a slight decrease in consumption of other cottons. The same is true of stocks in spinners' hands January 31, except for a slight increase in stocks of other cotton.

Consumption for the six months ended January 31, in bales, regardless of weight, was 1,092,000 American this season, compared to 850,000 in the same period last season; 86,000 East Indian, compared to 104,000; 233,000 Egyptian, compared to 234,000, and 152,000 others compared to 153,000, or a grand total of 1,563,000 this season, compared to 1,341,000 for 6 months of last season.

Stocks in spinners' hands in Great Britain, in bales, regardless of weight, on January 31, were 132,000 American this year, compared to 115,000 last year; 9,000 East Indian, compared to 19,000; 57,000 Egyptian compared to 78,000, and 40,000 others, compared to 39,000, or a grand total of 238,000 this year, compared to 252,000 last year.

London Parley on Cotton Standards

In face of the avowed intention of the Liverpool Cotton Association to withdraw from the observance of the agreement providing for the acceptance of the American cotton standards in world trade entered into by it with the cotton associations of Europe and the United States Department of Agriculture, there is some conjecture as to what might be the outcome of a complete failure of the agreement.

The Secretary of Agriculture has sent out a call for a meeting of the associations signatory to the agreement and department officials to be held in London in May for the consideration of some minor changes in the text of the agreement.

Officials here declare that the prospects for reconsideration by the Liverpool Cotton Association of its notice to withdraw are most favorable and that a round table discussion of the technicalities involved will result in complete accord.

American Mill Operations Curtailed

Curtailment of mill operations has begun, in fact has increased steadily since the March figures of the Department of Commerce were issued, showing a falling off of about 5 per cent from the peak. Stock accumulations have increased in mill warehouses rather rapidly of late, especially among mills making coarse colored cottons, brown sheetings and drills. Although the first quarter of the year brought some profit to the mills, the lower prices now current and the expiration of orders are not at present very promising. In the heavy goods branch of the industry, especially where automobile requirements are involved, production continues steady and consumption high.

TREND OF THIS YEAR'S EXPORTS IN RUBBER GOODS

According to *Commerce Reports*, American exports of rubber goods during January and February of the present year were valued at $6,885,042 as compared with $5,737,159 for the first two months of 1924. Exports however of waterproof rubber footwear declined sharply during February, 1925, while partly due to the fewer number of business days during the month, the value of all rubber goods exports for February decreased to $3,161,309 from $3,723,733 for January and $3,027,840 in February, 1924. The falling-off in the demand for waterproof rubber footwear is customary however at this season, as the principal European markets import such goods chiefly during the latter half of the year.

The automobile tire trade in February continued steady, over 105,000 casings being exported as compared with 112,000 in the month preceding. The chief markets included: Argentina, 15,454; the United Kingdom, 10,983; Uruguay, 7,325; Brazil, 5,259; Cuba, 5,097; Australia, 5,013; Straits Settlements, 4,907; Philippine Islands, 4,098; Mexico, 4,035; and Belgium, 3,482. The trade in

mechanical rubber goods was about equal to that in January, although exports of rubber packing were relatively low. There has been less demand than usual also during the last four months for rubber belting, the average value per pound for such exports having been in 1924 about $0.59, while during February, 1925, the average unit value was only $0.52.

Over 16,500 water bottles and fountain syringes were exported during February, Argentina, Uruguay, Germany, Cuba, and Great Britain being the chief markets. There was a considerable advance in the demand for bathing caps, 24,746 dozen being exported in February as compared with 15,477 dozen in January. The European trade is said to be stocking up for the coming season. The value of exports of rubber toys, balls and balloons continued high, the total figure for February being $87,703, as against $94,431 for the month preceding. The United Kingdom represented the best market for these goods, while other good customers included the Netherlands, Canada, Germany, Belgium, Australia, and British South Africa. As indicated by the above figures the general trend of this year's export trade is so far encouraging.

Metal Market Review

New York

During the first part of May, London speculative trading caused an unsettled condition in all the American metal markets, followed by lower prices. Later in the month, however, the tone improved, with prices firmer and higher.

ALUMINUM. The market for this metal continues to show little change in price or tone. In the automotive industry, particularly among the manufacturers of parts, there has been a good demand for secondary aluminum.

ANTIMONY. During the first of May there was a heavy demand for this metal and prices became higher. By the middle of the month somewhat of a falling-off was evident.

COPPER. World production and consumption of copper in 1924 were record breaking, with consumption 10 per cent greater than production. According to compilations by the American Bureau of Metal Statistics, the world consumption of copper last year totaled 1,394,200 metric tons of 2,204 pounds, against 1,246,600 tons in 1923. World production in 1924 was 1,373,600 tons, as compared with 1,286,600 tons the previous year. The proposed curtailment in the American production of copper resulted in an output for April of 167,804,000 pounds, as compared with the March figure of 184,404,000 pounds, or a decrease of 16,600,000 pounds. Copper exports in March of 127,000,000 pounds broke all records.

LEAD. There has been a fairly good demand for this metal in Europe as well as in the United States, and prompt lead has become somewhat scarce. During the middle of the month the price rose $5 a ton in the outside market.

STEEL. One authority says that irregularity has been recently the chief feature of the steel industry—irregularity in buying, in prices, and in production, as well as in the price situation in general. The *Iron Age* states that the average operations for the industry were at slightly under 70 per cent during May, as compared with 79 per cent for the month previous. According to the American Iron and Steel Institute, the April production of ingots for all companies aggregated 3,587,524 tons, the smallest total reported since December. It is believed, however, that conditions are now more healthy than during the first quarter of this year, there being no overproduction, while a greater stability is also becoming evident.

TIN. A rapid decline at the beginning of May in London prices for tin had its effect on the American market, although during the middle of the month greater steadiness was evident. Consumption of tin has become heavier and users are said to be buying only prompt tonnages.

ZINC. During the middle of the month the market was very quiet and buying was at a low ebb. According to the American Zinc Institute, stocks of zinc in the hands of American producers on May 1 were 18,337 tons, against 17,196 on April 1. World production of zinc in 1924 amounted to 1,015,600 tons, while consumption totaled 1,037,900 tons.

Basic Metals

May 21, 1925

	Cents per pound	
Aluminum, virgin, 98@99 per cent	27.00	@28.00
Antimony	16.50	@17.00
Copper—Lake, spot	13.75	@13.875
Electrolytic, spot	13.625	@13.75
Castings, refinery	13.125	@
Lead, spot, New York	8.00	@ 8.25
Lead, spot, East St. Louis	7.75	@ 8.00
Nickel, ingot, pound	31.00	@32.00
Tin, spot	55.00	@
Zinc, spot, New York	6.25	@ 6.275
Zinc, spot, East St. Louis	6.90	@ 6.925

Steel Wire

BASE PRICE* ON NO. 9 GAGE AND COARSER

	Cents per pound	
Bright basic	4.25	@
Annealed soft	4.50	@
Galvanized annealed	5.15	@
Coppered basic	5.15	@
Tinned soft Bessemer	6.15	@

* Regular extras for lighter gage.

Copper Wire

BASE PRICE F. O. B. FACTORY.

	Cents per pound	
Bare copper wire	16.00	@
No. 6 B. & S. gage	16.00	@
No. 8 B. & S. gage	16.00	@
No. 14 B. & S. gage	17.00	@

AMERICAN CRUDE RUBBER IMPORTS—1924

An article in *Commerce Reports* reviewing American foreign trade during the past year calls attention to the 10.2 per cent increase in the country's export trade as compared with that of 1923, such trade having been greater, it is stated, than in any previous year since 1920. The fact is noted that the country's 1924 shipments of cotton, at all times the leading export, increased 27 per cent in quantity and 18 per cent in value as compared with 1923, while the value of automobiles exported increased nearly 25 per cent.

Crude rubber imports in 1924 ranked as the fourth greatest commodity in the country's import trade, as they did in pre-war years. It is mentioned however that "the proportion represented by imports of crude materials would be materially higher in 1924 than before the war were it not for the fact that the prices of rubber, the quantity of which imported has risen enormously, had greatly declined, contrasting with the increase in the prices of most other commodities." Later it is again stated: "The most striking quantitative increases (in 1924 as compared with 1910-1914) have been in the importations of crude rubber, which has multiplied seven-fold although owing to lower prices the value has barely doubled." Statistics show that United States crude rubber imports during 1924 have totaled 737,660,618 pounds, value $174,202,165.

FIRESTONE UNIVERSITY SCHOLARSHIP OFFERED

High school students are again offered the opportunity of securing a four years' university scholarship under conditions established by Harvey S. Firestone, president of the Firestone Tire & Rubber Co. Since 1920 Mr. Firestone, as founder and donor, has been interested in this annual good roads competition, the contest being conducted by the Highway Education Board.

Essays to be submitted this year should deal with the subject "Economies Resulting from Highway Improvement," the contest being open to all high school students. Those desiring full particulars should address Highway Education Board, Willard Building, Washington, D. C.

Exports of India Rubber Manufactures from the

EXPORTED TO	Belting Value	Hose Value	Packing Value	Thread Value	Boots Pairs	Boots Value	Shoes Pairs	Shoes Value	Canvas Shoes with Rubber Soles Pairs	Canvas Shoes with Rubber Soles Value	Soles and Heels Value	Waterproofed Auto Cloth and Rubberized Fabrics Value
EUROPE												
Austria	.....	$114	.....	.....	12	$24	133	$208	189	$368	.....	.....
Azores & Madeira Islands	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Belgium	$1,942	2,634	$1,902	$3,197	480	1,407	120	94	1,244	1,062	.....	$2,978
Bulgaria	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Czechoslovakia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Denmark	401	393	729	.....	5,855	8,404	6,728	3,824	55,139	38,364	$2,340	223
Finland	1,388	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,516	143
France	1,799	696	3,160	32,019	232	900	536	571	2,083	1,491	.....	4,066
Germany	469	.....	.....	22,072	669	1,463	408	349	16,392	15,264	.....	2,083
Greece	.....	.....	.....	.....	17	22	.....	.....	.....	.....	.....	93
Hungary	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Iceland & Faroe Islands	.....	.....	.....	.....	3,272	6,165	338	697	960	918	.....	.....
Italy	876	815	.....	19,226	156	320	48	152	2,932	2,488	190	2,546
Latvia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lithuania	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Malta, Gozo and Cyprus Islands	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Netherlands	.....	3,354	317	.....	295	740	.....	.....	1,420	1,257	142	1,148
Norway	1,677	1,913	90	.....	996	2,636	7,919	4,731	16,396	12,633	1,594	2,143
Poland and Danzig	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Portugal	.....	16	.....	.....	857	3,408	.....	.....	.....	.....	41	.....
Rumania	.....	.....	54	.....	.....	.....	.....	.....	.....	.....	.....	.....
Russia in Europe	.....	446	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Spain	4,951	.....	.....	14,467	396	1,116	18,576	11,145	552	347	.....	.....
Sweden	6,520	1,654	767	.....	978	3,211	.....	.....	384	659	1,100	1,518
Switzerland	438	.....	.....	.....	.....	.....	48	38	300	592	24	808
United Kingdom	25,457	41,794	8,792	46,037	16,958	44,373	4,125	4,461	106,190	78,822	834	20,064
Irish Free State	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Yugoslavia, Albania, etc	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
TOTALS, EUROPE	$45,918	$53,829	$15,811	$137,018	31,174	$74,189	38,979	$26,270	204,181	$154,265	$7,781	$37,813
NORTH AMERICA												
Canada	$16,738	$12,862	$9,219	$10,570	1,503	$4,543	645	$748	967	$561	$863	$28,791
British Honduras	64	107	.....	.....	9	7	12	12	658	829	.....	.....
Costa Rica	62	637	509	.....	.....	.....	.....	.....	.....	.....	1,203	40
Guatemala	434	509	427	.....	.....	.....	.....	.....	1,968	1,449	2,456	623
Honduras	97	1,410	347	.....	.....	.....	404	329	541	579	525	.....
Nicaragua	2,083	394	373	.....	.....	.....	.....	.....	989	899	1,500	.....
Panama	1,982	944	2,381	.....	24	69	744	959	3,586	2,831	2,747	198
Salvador	775	221	.....	53	.....	.....	.....	.....	3,603	2,056	2,633	.....
Greenland	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mexico	42,602	22,059	6,994	1,795	58	218	1,654	1,621	31,506	23,634	28,262	2,785
Miquelon and St. Pierre Is.	.....	.....	.....	.....	2,373	3,253	.....	.....	.....	.....	42	.....
Newfoundland and Labrador	1,592	414	124	.....	4,540	13,070	1,800	4,305	13,814	6,887	2,013	.....
Bermuda	23	54	27	.....	33	107	171	224	735	701	90	204
Barbados	205	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	138
Jamaica	11	146	153	.....	.....	.....	.....	.....	855	773	152	291
Trinidad and Tobago	237	35	137	.....	.....	.....	.....	.....	5,630	1,132	112	377
Other British West Indies	290	139	70	.....	.....	.....	.....	.....	1,193	970	35	30
Cuba	8,504	12,652	3,665	.....	552	1,531	1,000	617	89,394	49,186	11,860	5,432
Dominican Republic	547	1,363	451	.....	.....	.....	36	27	17,427	11,686	632	351
Dutch West Indies	.....	137	4	.....	.....	.....	33	26	8,716	7,120	406	.....
French West Indies	.....	.....	.....	.....	13	37	.....	.....	.....	.....	.....	.....
Haiti	.....	153	.....	.....	.....	.....	.....	.....	3,633	2,783	743	227
Virgin Islands of U. S.	21	.....	32	.....	.....	.....	.....	.....	302	338	333	.....
TOTALS, NORTH AMERICA	$76,267	$54,446	$24,913	$12,418	9,105	$22,835	6,509	$8,868	186,015	$114,414	$56,607	$39,487
SOUTH AMERICA												
Argentina	$5,971	$7,964	$3,359	$288	362	$1,386	300	$183	34,415	$20,533	$2,310	$9,759
Bolivia	377	282	377	.....	.....	.....	.....	.....	.....	.....	115	.....
Brazil	4,954	3,753	685	.....	.....	.....	2,197	2,224	.....	.....	.....	677
Chile	14,071	2,990	986	.....	132	1,017	2,074	2,123	728	715	1,246	3,283
Colombia	1,395	2,444	217	.....	.....	.....	300	222	7,416	5,354	10,166	624
Ecuador	.....	46	304	.....	.....	.....	.....	.....	.....	.....	902	.....
British Guiana	104	414	288	.....	.....	.....	.....	.....	268	220	.....	.....
Dutch Guiana	.....	.....	.....	.....	.....	.....	.....	.....	396	250	.....	49
Peru	4,592	3,653	1,627	.....	244	1,312	72	65	444	300	687	273
Uruguay	724	142	35	.....	.....	.....	.....	.....	382	175	983	1,932
Venezuela	886	4,278	1,285	.....	.....	.....	.....	.....	.....	.....	3,043	.....
TOTALS, SOUTH AMERICA	$33,074	$25,966	$9,163	$288	758	$3,715	4,943	$4,817	44,049	$27,547	$19,446	$16,597
ASIA												
Aden	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
British India	$9,065	$5,972	$348	.....	.....	.....	144	$109	3,221	$2,770	$101	$1,276
Ceylon	.....	776	.....	.....	.....	.....	576	403	312	266	.....	2,001
Straits Settlements	.....	27	.....	.....	.....	.....	.....	.....	2,400	1,658	.....	529
Other British East Indies	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
China	2,978	1,551	330	.....	.....	.....	2,570	2,654	7,073	6,539	28	2,669
Chosen	.....	.....	432	.....	.....	.....	.....	.....	.....	.....	.....	38
Java and Madura	2,513	2,373	1,467	.....	.....	.....	252	216	5,160	5,875	.....	.....
Other Dutch East Indies	288	.....	632	.....	.....	.....	.....	.....	.....	.....	.....	74
Hejaz, Arabia, etc	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hongkong	16	25	245	.....	.....	.....	384	304	927	869	.....	.....
Japan	2,480	1,414	9,370	$7,091	8	$35	.....	.....	.....	.....	.....	445
Kwantung, leased territory	$197	.....	$1,013	.....	.....	.....	.....	.....	.....	.....	.....	$1,924
Palestine and Syria	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	151
Persia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Philippine Islands	6,353	$3,235	3,311	.....	1,165	$2,632	.....	.....	47,170	$41,156	$2,140	1,660
Russia in Asia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Siam	.....	.....	.....	.....	.....	.....	.....	.....	60	65	.....	.....
TOTAL, ASIA	$23,890	$15,373	$17,148	$7,091	1,173	$2,667	3,926	$3,686	66,323	$59,198	$2,269	$10,767
OCEANIA												
Australia	$6,737	$4,919	$9,000	.....	276	$772	612	$589	336	$624	.....	$6,479
British Oceania	.....	.....	.....	.....	.....	.....	.....	.....	347	354	.....	.....
French Oceania	.....	.....	.....	.....	.....	.....	.....	.....	888	777	$82	.....
New Zealand	3,506	898	268	.....	3,824	13,245	160	76	.....	.....	150	573
Other Oceania	24	.....	15	.....	.....	.....	.....	.....	662	744	.....	.....
TOTALS, OCEANIA	$10,267	$5,817	$9,283	.....	4,100	$14,017	772	$665	2,233	$2,499	$232	$7,052

United States by Countries During March, 1925

Waterproofed Outer Garments Value	Pneumatic Casings: Automobile Number	Pneumatic Casings: Automobile Value	Pneumatic Casings: Others Value	Pneumatic Tubes: Automobile Value	Pneumatic Tubes: Others Value	Solid Tires: Automobile and Motor Truck Number	Solid Tires: Automobile and Motor Truck Value	Solid Tires: Others Value	Tire Rubber Accessories, Repair Materials Value	Hard Rubber Goods: Electrical Supplies Value	Hard Rubber Goods: Others Value	Rubber Water Bottles and Fountain Syringes Value	Other Druggists' Rubber Sundries Value	Bathing Caps Value	Rubber Toys, Balls and Balloons Value
.....	551	$9,194	$540	$1,111	$88	.....	.....	.....	.....	.....	$1,301	.....	.....	.....	$740
.....	20	152	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	1,864	33,356	53	3,156	.....	.....	.....	.....	$910	.....	.....	$327	$668	$2,743	2,315
.....	.....	.....	.....	.....	9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	377	8,826	.....	657	.....	95	$2,952	.....	.....	.....	.....	.....	.....	.....	.....
$118	11,277	105,043	.....	18,672	.....	129	2,797	.....	1,761	$148	70	.....	1,352	10,241	1,791
.....	.....	.....	.....	2,275	.....	.....	.....	.....	94	.....	.....	.....	.....	.....	.....
144	1,550	24,619	.....	4,563	.....	12	234	.....	5,395	1,536	11,392	1,130	842	3,837	.....
.....	265	8,384	24	1,243	6	.....	.....	.....	2,033	.....	.....	108	174	.....	17,933
.....	626	8,955	.....	871	.....	110	2,980	.....	968	.....	212	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,293
.....	109	1,077	.....	177	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
20	1,344	13,796	.....	1,912	.....	14	425	.....	54	.....	.....	.....	1,323	3,500	343
.....	.....	.....	.....	.....	.....	.....	.....	.....	33	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	90	.....	.....	.....	55
.....	4,669	49,024	2,309	7,662	304	62	1,884	.....	430	40	601	78	917	1,339	16,938
.....	1,650	29,995	1,183	4,337	484	27	1,486	.....	801	83	.....	.....	.....	103	709
.....	1,399	18,847	611	3,381	177	4	131	.....	35	.....	.....	.....	.....	.....	177
274	260	3,273	.....	516	.....	.....	.....	.....	.....	.....	.....	.....	133	.....	.....
.....	171	2,256	26	604	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	25	323	1,818	126	219	12	366	.....	.....	.....	.....	.....	.....	.....	.....
.....	2,481	23,311	.....	4,410	.....	76	2,096	.....	1,165	996	.....	251	58	408	435
.....	3,099	44,591	.....	3,287	.....	.....	.....	.....	518	.....	.....	125	1,719	5,795	1,470
.....	573	14,787	.....	1,599	.....	.....	.....	.....	.....	.....	.....	.....	207	378	145
696	12,897	143,846	.....	10,172	.....	1,757	35,147	.....	8,504	1,226	16,978	144	24,743	21,184	58,544
10	176	1,191	.....	462	.....	.....	.....	.....	56	.....	.....	.....	.....	.....	55
.....	115	1,327	.....	274	.....	16	537	.....	.....	.....	.....	.....	.....	.....	.....
$1,262	45,498	$546,173	$6,564	$71,467	$1,287	2,314	$51,035	.....	$22,751	$4,029	$30,644	$2,163	$32,136	$49,528	$102,943
$3,555	1,272	$23,148	$956	$4,079	$134	208	$6,999	$882	$12,494	$11,231	$11,692	$469	$11,310	$2,910	$13,701
.....	9	161	6	43	6	.....	.....	268	.....	.....	12	.....	27	.....	10
1,277	204	3,042	.....	447	.....	6	272	.....	.....	.....	.....	.....	167	359	105
481	418	7,637	.....	905	.....	12	280	.....	122	.....	.....	16	190	78	82
134	95	2,616	.....	394	.....	76	3,588	.....	.....	.....	147	32	141	.....	200
.....	145	2,045	109	519	.....	8	212	.....	.....	.....	68	.....	178	.....	102
300	1,810	22,758	763	3,329	419	160	2,888	683	339	.....	18	479	659	98	22
336	188	3,337	.....	641	50	.....	.....	.....	278	.....	.....	.....	132	11	71
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
17,011	7,859	93,407	588	12,387	11	224	7,060	407	6,518	.....	1,571	977	4,078	318	5,973
438	.....	.....	.....	.....	.....	.....	.....	.....	219	.....	.....	.....	.....	.....	.....
10,524	510	5,050	.....	919	.....	2	54	.....	.....	.....	147	96	312	43	33
264	.....	.....	12	.....	3	.....	.....	.....	.....	.....	.....	.....	69	.....	.....
.....	18	181	16	84	.....	.....	.....	.....	18	.....	.....	14	.....	.....	.....
90	396	3,846	.....	339	.....	22	488	.....	105	.....	1	12	43	.....	.....
.....	309	4,078	.....	474	.....	.....	.....	35	70	.....	.....	26	82	50	.....
.....	147	1,836	334	201	.....	6	103	74	202	.....	19	.....	.....	.....	.....
29,231	7,856	88,882	2,800	20,350	846	1,164	31,329	585	8,580	683	457	1,404	4,947	1,501	1,799
1,838	1,491	17 648	149	3,205	39	40	1,618	237	85	.....	.....	27	241	.....	14
254	326	3,002	.....	529	.....	.....	.....	.....	368	.....	.....	.....	.....	21	.....
.....	91	728	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
51	172	2,507	40	565	.....	.....	.....	247	28	.....	.....	.....	296	.....	.....
17	50	518	.....	109	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
$65,801	23,366	$286,427	$5,773	$49,519	$1,508	1,928	$54,896	$3,418	$29,426	$11,914	$14,132	$3,552	$22,872	$5,389	$22,112
$1,639	20,276	$218,878	$1,767	$47,632	$28	471	$14,320	$3,986	$8,777	$956	$37	$4,756	$7,615	$898	$948
.....	175	3.143	.....	559	.....	18	331	.....	140	.....	.....	8	25	.....	.....
.....	13,802	126,150	.....	16.660	.....	301	6,452	673	1,245	1,169	1,550	833	1,039	40	681
175	1,987	30,347	.....	2,202	.....	99	4.246	.....	22	684	16	170	181	.....	369
563	675	14,748	242	2,881	84	94	3,983	.....	200	.....	20	143	1,332	31	799
45	145	2,563	.....	576	.....	.....	.....	.....	25	.....	.....	73	66	.....	38
.....	12	120	.....	20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	49	513	.....	81	.....	8	131	.....	.....	.....	.....	.....	.....	.....	.....
5,152	1,511	23,702	.....	3,788	.....	20	905	.....	134	620	644	.....	207	.....	.....
2,643	3,158	43.334	.....	5,980	.....	136	3,452	.....	1,238	.....	.....	168	1,610	.....	136
.....	3,245	37,682	139	9,169	25	.....	.....	.....	463	.....	97	640	479	.....	322
$10,217	45,035	$501,186	$2,148	$89,548	$137	1,147	$33,820	$4,659	$12,245	$3,429	$2,364	$6,791	$12,554	$969	$3,293
.....	5	$55	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
$1,180	1,632	16,691	.....	$2,009	.....	141	$3,988	.....	$96	.....	.....	$66	$2,168	.....	$945
.....	391	4.936	.....	501	.....	20	432	$896	.....	.....	.....	.....	.....	.....	112
.....	612	6,463	.....	353	.....	41	728	.....	.....	.....	.....	.....	.....	.....	87
.....	8	76	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	1,016	11,533	.....	3,204	.....	41	599	.....	.....	.....	.....	61	716	$25	453
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	2,395	24,159	$368	1,135	.....	159	4,315	3,931	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	16	572	.....	.....	.....	.....	.....	.....	.....	.....
.....	24	360	.....	225	.....	8	157	.....	.....	.....	.....	.....	.....	.....	548
.....	.....	.....	.....	.....	.....	.....	.....	.....	6	$30	.....	.....	34	.....	.....
.....	4,921	45,273	.....	2,204	.....	305	3,862	321	1,096	652	$1,044	.....	1,544	2,151	.....
.....	5	$53	.....	$13	.....	.....	.....	.....	.....	.....	.....	.....	$252	$280	.....
.....	92	1,750	.....	379	.....	.....	.....	.....	$236	.....	.....	.....	.....	306	$344
.....	.....	.....	.....	454	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
$24,570	9,299	89,104	.....	9,227	$262	353	$10,087	$2,924	928	.....	$478	$21	1,277	.....	86
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1,700	.....	.....	.....	.....	.....	.....	.....	.....	130	.....	.....	.....	.....	.....	.....
$27,450	20,400	$200,455	$368	$19,704	$262	1,084	$24,740	$8,072	$2,492	$682	$1,522	$148	$5,991	$2,762	$2,579
$248	9,494	$133,169	.....	$24,236	$656	996	$27,912	$76	$6,576	$433	$19,268	$74	$2,035	.....	$1,856
.....	38	606	.....	144	.....	.....	.....	.....	103	.....	.....	.....	.....	.....	.....
.....	4	27	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	4,383	61,526	$1,061	6,975	.....	533	21,565	.....	1,854	962	.....	993	880	.....	682
.....	536	10,916	.....	1,460	10	.....	.....	.....	48	.....	68	.....	.....	.....	23
$248	14,455	$206,244	$1,061	$32,815	$666	1,529	$49,477	$76	$8,581	$1,395	$19,336	$1,067	$2,915	.....	$2,561

Exports of India Rubber Manufactures from the United

	Belting Value	Hose Value	Packing Value	Thread Value	Boots Pairs	Boots Value	Shoes Pairs	Shoes Value	Canvas Shoes with Rubber Soles Pairs	Canvas Shoes with Rubber Soles Value	Soles and Heels Value	Waterproofed Auto Cloth and Rubberized Fabrics Value
AFRICA												
Belgian Kongo	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
British West Africa	.....	.....	.....	.....	.....	.....	300	$158	4,648	$1,128	.....	.....
British South Africa	$6,128	$8,139	$5,173	.....	.....	.....	1,991	1,204	1,080	1,452	$1,041	$707
British East Africa	.....	.....	29	.....	.....	.....	.....	.....	.....	.....	.....	.....
Canary Islands	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	162	188
Egypt	200	.....	.....	.....	.....	.....	.....	.....	.....	.....	783	208
Algeria & Tunis	1,600	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Other French Africa	.....	.....	.....	.....	.....	.....	.....	.....	100	18	.....	.....
Liberia	.....	.....	.....	.....	.....	.....	.....	.....	100	18	.....	.....
Morocco	.....	.....	60	.....	.....	.....	.....	.....	.....	.....	.....	.....
Portuguese East Africa	603	.....	79	.....	.....	.....	.....	.....	72	63	.....	.....
Other Portuguese Africa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Spanish Africa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
TOTALS, AFRICA	$8,531	$8,139	$5,341	.....	.....	.....	2,191	$1,362	6,000	$2,679	$1,986	$1,103
GRAND TOTAL	$197,947	$163,570	$81,659	$156,815	46,310	$117,423	57,320	$45,668	508,801	$360,602	$88,321	$112,819

Official India Rubber Statistics for the United States

Imports of Crude and Manufactured Rubber

	March, 1925 Pounds	March, 1925 Value	Nine Months Ended March, 1925 Pounds	Nine Months Ended March, 1925 Value
UNMANUFACTURED—*free*				
Crude rubber	74,167,245	$25,162,943	575,115,304	$152,834,878
Balata	51,615	29,165	727,358	384,181
Jelutong or Pontianak	1,034,143	101,113	10,374,959	944,613
Gutta percha	274,408	53,344	1,973,666	320,448
Guayule	777,458	138,048	3,124,958	550,486
Rubber scrap	515,747	22,133	9,790,509	353,912
Totals	76,820,616	$25,506,746	601,106,754	$155,388,518
Chicle—*dutiable*	1,744,318	$838,022	752,675	$3,678,644
MANUFACTURED—*dutiable*				
Rubber belting	83,087	$60,535	496,042	$349,397
Other rubber manufactures of substitutes for rubber	.....	92,288	.....	875,875
Totals	83,087	$152,823	496,042	$1,225,272

Exports of Foreign Merchandise

UNMANUFACTURED				
Crude rubber	2,957,433	$1,088,451	18,703,479	$6,008,698
Balata	54,577	35,857	549,092	358,791
Jelutong or Pontianak	.....	.....	.....	.....
Gutta percha and rubber substitutes and scrap	3,410	362	48,493	6,540
Totals	3,015,420	$1,124,670	19,301,064	$6,374,029
Chicle	31,475	$22,128	148,890	$65,635
MANUFACTURED				
Gutta percha and India rubber	79,756	$25,916	174,309	$66,027
Totals	79,756	$25,916	174,309	$66,027

Exports of Domestic Merchandise

MANUFACTURED				
India rubber				
Reclaimed	603,031	$66,234	4,315,991	$411,402
Scrap and old	3,232,379	138,866	19,645,556	809,977
Footwear				
Boots—*pairs*	46,310	117,423	724,139	1,653,948
Shoes—*pairs*	57,320	45,668	1,431,562	1,165,919
Canvas shoes with rubber soles—*pairs*	508,801	360,602	3,282,722	2,360,042
Rubber water bottles and fountain syringes—*number*	20,104	14,261	240,281	171,885
Other druggists' rubber sundries	80,569	77,701	564,621	660,008
Bathing caps—*dozen*	36,453	59,396	101,483	180,740
Hard rubber goods				
Electrical hard rubber goods	70,323	21,472	382,173	171,590
Other hard rubber goods	121,218	67,998	483,417	525,827
Tires				
Pneumatic casings				
For automobiles.*number*	151,352	1,777,093	1,009,463	12,016,864
Others—*number*	4,293	15,999	36,769	131,355
Pneumatic tubes				
For automobiles.*number*	164,138	268,089	890,473	1,593,577
Others—*number*	4,238	3,873	37,046	32,685
Solid tires				
For automobiles and motor trucks.*number*	8,086	216,525	71,080	1,826,410
Others—*number*	75,640	16,225	683,611	170,266
Tire accessories	206,025	76,731	1,170,542	467,512
Belting	349,750	197,947	2,622,369	1,491,307
Hose	428,959	163,570	3,110,632	1,198,311
Packing	172,282	81,659	1,350,131	614,048
Soles and heels	289,301	88,321	2,026,598	654,718
Thread	136,100	156,815	982,458	1,152,597
Other rubber manufactures	515,998	242,745	3,447,297	1,956,746
Totals	.....	$4,275,213	.....	$31,417,734

Imports of Crude Rubber Into the United States by Customs Districts

	March, 1924 Pounds	March, 1924 Value	March, 1925 Pounds	March, 1925 Value
Massachusetts	936,025	$229,222	2,342,555	$826,619
New York	44,295,637	11,112,124	58,828,886	23,363,011
Philadelphia	671,920	164,574	.....	.....
Maryland	224,005	57,681	1,674,584	539,907
Los Angeles	250,819	58,656	883,728	287,453
Oregon	56,000	15,784	67,200	18,947
San Francisco	.....	.....	79,550	24,302
Colorado	.....	.....	246,400	88,338
Washington	.....	.....	44,342	14,366
Hawaii	70	21	.....	.....
Totals	46,434,476	$11,638,062	74,167,245	$25,162,943

A NEW RUBBER ORGANIZATION OF RUBBER BROKERS WHICH will carry on business under the name of Allard & Co., Keizersgracht 411, Amsterdam, Holland, is headed by M. M. Allard, formerly agent for Wynand & Keppler, of Amsterdam, and Hymans, Kraay & Co., London, England.

United States Crude and Waste Rubber Imports for 1925 (By Months)

	Plantations	Parás	Africans	Centrals	Guayule	Manicoba and Matto Grosso	Total 1925	Total 1924	Balata	Miscellaneous	Waste
January—*tons*	28,480	989	325	54	112	...	29,960	21,611	22	1,462	206
February	21,740	1,203	120	224	163	6	23,456	31,763	48	908	241
March	31,067	1,906	287	303	346	3	33,914	17,752	25	1,022	186
April	25,403	1,167	332	78	244	7	27,231	42,436	38	987	243
Totals, 4 months, 1925—*tons*	106,690	5,265	1,064	661	865	16	114,561	.....	133	4,379	876
Totals, 4 months, 1924	108,035	3,898	1,175	223	231	...	.....	113,562	211	2,517	446

Compiled from statistics supplied by the Rubber Association of America, Inc.

States by Countries During March, 1925 *(Continued)*

Waterproofed Outer Garments Value	Pneumatic Casings: Automobile Number	Pneumatic Casings: Automobile Value	Pneumatic Casings: Others Value	Pneumatic Tubes: Automobile Value	Pneumatic Tubes: Others Value	Solid Tires: Automobile and Motor Truck Number	Solid Tires: Automobile and Motor Truck Value	Solid Tires: Others Value	Tire Rubber Accessories, Repair Materials Value	Hard Rubber Goods: Electrical Supplies Value	Hard Rubber Goods: Others Value	Rubber Water Bottles and Fountain Syringes Value	Other Druggists' Rubber Sundries Value	Bathing Caps Value	Rubber Toys, Balls and Balloons Value
.....	5	$107	.....	$22	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
$405	94	1,282	.....	180	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
7,471	1,579	23,436	.....	3,124	.....	26	$752	.....	$1,236	$23	.....	$540	$871	$619	$2,232
.....	386	4,741	.....	479	.....	6	48	.....	.....	.....	.....	.....	.....	.....	.....
.....	316	4,109	.....	625	.....	26	1,125	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	$42	.....	$7	6	160	.....	.....	.....	.....	.....	362	129	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
45	146	1,841	.....	481	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
45	5	120	.....	18	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	16	274	.....	23	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	174
.....	1	25	.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	50	673	43	81	6	20	472	.....	.....	.....	.....	.....	.....	.....	.....
$7,966	2,598	$36,608	$85	$5,036	$13	84	$2,557	.....	$1,236	$23	.....	$540	$1,233	$748	$2,406
$112,944	151,352	$1,777,093	$15,999	$268,089	$3,873	8,086	$216,525	16,225	$76,731	$21,472	$67,998	$14,261	$77,701	$59,396	$135,894

United Kingdom Rubber Statistics

Imports

	March, 1925 Pounds	March, 1925 Value	Three Months Ended March, 1925 January-March, 1925 Pounds	Three Months Ended March, 1925 January-March, 1925 Value
UNMANUFACTURED				
Crude rubber From—				
Straits Settlements	6,644,000	£454,286	14,925,900	£1,021,797
Federated Malay States	2,614,700	172,892	6,423,500	433,238
British India	1,059,400	71,167	3,610,500	239,594
Ceylon and Dependencies	1,780,600	122,305	5,702,100	383,113
Other Dutch Possessions in Indian Seas	544,800	41,780	1,977,400	143,566
Dutch East Indies (except other Dutch possessions in Indian Seas)	886,000	59,948	4,172,400	277,153
Other countries in East Indies and Pacific, not elsewhere specified	88,000	6,335	453,600	35,425
Brazil	838,400	56,653	2,858,500	195,987
West Africa				
French West Africa	257,200	13,199	740,000	39,105
Gold Coast	6,000	326	21,700	1,278
Other parts of West Africa	136,300	9,231	387,700	23,039
East Africa, including Madagascar	36,900	2,720	214,300	15,172
Other countries	18,600	1,211	145,100	9,735
Totals	14,910,900	£1,012,053	41,632,700	£2,818,202
Waste and reclaimed rubber	407,800	4,563	1,272,600	14,526
Gutta percha and balata	1,079,000	142,204	3,316,200	446,664
Rubber substitutes	.....	.....	23,500	831
Totals	16,397,700	£1,158,820	46,245,000	£3,280,223
MANUFACTURED				
Boots and shoes....*doz. pairs*	34,946	£64,518	83,336	£199,850
Tires and tubes				
Pneumatic				
Outer covers	.....	194,537	.....	587,786
Inner tubes	.....	24,593	.....	81,607
Solid tires	.....	20,211	.....	77,836
Other rubber manufactures	.....	143,165	.....	405,120
Totals	.....	£447,024	.....	£1,352,199

Exports

UNMANUFACTURED				
Waste and reclaimed	1,025,800	£13,642	3,415,000	£39,246
Rubber substitutes	138,100	3,102	357,000	8,749
Totals	1,163,900	£16,744	3,772,000	£47,995
MANUFACTURED				
Boots and shoes....*doz. pairs*	30,732	£44,747	76,843	£113,397
Tires and tubes				
Pneumatic				
Outer covers	.....	288,630	.....	689,054
Inner tubes	.....	56,524	.....	140,407
Solid tires	.....	39,552	.....	101,410
Other rubber manufactures	.....	286,066	.....	768,559
Totals	.....	£715,919	.....	£1,812,827

Exports—Colonial and Foreign

	March, 1925 Pounds	March, 1925 Value	Three Months Ended March, 1925 January-March, 1925 Pounds	Three Months Ended March, 1925 January-March, 1925 Value
UNMANUFACTURED				
Crude rubber To				
Russia	2,424,900	£179,657	5,410,400	£403,212
Sweden, Norway and Denmark	306,400	23,004	745,900	56,127
Germany	2,684,200	180,137	6,551,900	458,793
Belgium	804,700	61,675	1,689,100	130,307
France	3,747,500	288,947	10,555,700	807,660
Spain	144,300	10,597	256,300	19,339
Italy	1,440,300	110,044	4,659,700	352,838
Austria	92,400	7,512	104,200	8,502
Hungary	200	21	7,600	585
Other European countries	274,300	19,651	838,900	57,609
United States	9,898,900	750,843	22,105,900	1,646,122
Canada	594,500	49,352	2,144,700	158,370
Other countries	105,100	7,840	387,400	29,570
Totals	22,517,700	£1,689,280	55,457,700	£4,129,034
Waste and reclaimed rubber	20,000	£511	31,100	£804
Gutta percha and balata	142,900	10,594	421,500	29,944
Rubber substitutes	55,200	2,659	55,200	2,659
Totals	22,735,800	£1,703,044	55,965,500	£4,162,441
MANUFACTURED				
Boots and shoes....*doz. pairs*	218	£550	727	£2,410
Tires and tubes				
Pneumatic				
Outer covers	.....	22,575	.....	77,806
Inner tubes	.....	3,456	.....	10,717
Solid tires	.....	1,318	.....	4,251
Other rubber manufactures	.....	17,271	.....	58,500
Totals	.....	£45,170	.....	£153,684

Landings, Deliveries and Stocks in London and Liverpool as Returned by the Warehouses and Wharves During March, 1925

	Landed for Mar. Tons	Delivered for Mar. Tons	Stocks, March 31: 1925 Tons	1924 Tons	1923 Tons
LONDON:					
Plantation	4,679	9,969	17,958	55,327	63,129
Other grades	1	7	*60	101	39
LIVERPOOL:					
Plantation	†195	†602	†1,705	†5,112	†6,627
Pará and Peruvian	198	211	133	585	341
Other grades	...	11	35	210	243
Totals tons, London and Liverpool	5,073	10,800	19,891	61,335	70,439

*Corrected by inspection.

†Official returns from the six recognized public warehouses.

Crude Rubber Arrivals at New York as Reported by Importers

Parás and Caucho

	Fine Cases	Medium Cases	Coarse Cases	Caucho Cases	Cametá Cases
APRIL 27. By "American Legion," South America.					
Paul Bertuch & Co.	†242	....	....	....	....
APRIL 27. By "Polycarp," South America.					
H. A. Astlett & Co.	160	....	10	4	....
Paul Bertuch & Co.	32	....	....	127	....
Paul Bertuch & Co.	††42	....	‡322	**562	....
L. Littlejohn & Co., Inc.	18	....	23	28	....
Meyer & Brown, Inc.	31	....	9	....	....
Ultramares Corp.	26	....	1	65	....
MAY 8. By "Saint Patrick," South America.					
H. A. Astlett & Co.	....	....	20	126	....
L. Littlejohn & Co., Inc.	....	....	....	700	....
Poel & Kelly, Inc.	....	....	....	....	....
MAY 11. By "Pan American," South America.					
Paul Bertuch & Co.	†625	....	**53	....	....
MAY 14. By "Bernini," South America.					
Paul Bertuch & Co.	63	....	....	263	....
General Rubber Co.	....	....	....	....	14
L. Littlejohn & Co., Inc.	613	33	196	246	....
Meyer & Brown, Inc.	713	....	....	167	....
Poel & Kelly, Inc.	139	27	102	1,438	....

†Biscuits. **Bales. ††Crates. ‡Sacks.

Plantations

	Cases
APRIL 18. By "City of Manila," Far East.	
Hood Rubber Co.	*127
L. Littlejohn & Co., Inc.	2,618
Meyer & Brown, Inc.	3,305
H. Muehlstein & Co., Inc.	1,224
Poel & Kelly, Inc.	364
Vernon Metal & Produce Co., Inc.	168
Chas. T. Wilson Co., Inc.	254
APRIL 18. By "Verentia," Europe.	
Chas. T. Wilson Co., Inc.	35
APRIL 20. By "City of Manila," Far East.	
H. A. Astlett & Co.	112
APRIL 20. By "Minnewaska," Europe.	
H. A. Astlett & Co.	22
J. T. Johnstone & Co., Inc.	826
L. Littlejohn & Co., Inc.	2,302
Meyer & Brown, Inc.	594
APRIL 21. By "Laconia," England.	
Baird Rubber & Trading Co., Inc.	326
L. Littlejohn & Co., Inc.	225
APRIL 21. By "Mississippi," Europe.	
H. A. Astlett & Co.	181
Baird Rubber & Trading Co., Inc.	132
Hood Rubber Co.	*1,445
J. T. Johnstone & Co., Inc.	438
L. Littlejohn & Co., Inc.	149
Poel & Kelly, Inc.	326
APRIL 21. By "Verentia," Europe.	
H. A. Astlett & Co.	180
L. Littlejohn & Co., Inc.	70
Poel & Kelly, Inc.	4,343
APRIL 24. By "Eastern Prince," Far East.	
Baird Rubber & Trading Co., Inc.	4,061
Baird Rubber & Trading Co., Inc.	*240
The Fisk Rubber Co.	144
General Rubber Co.	2,100
J. T. Johnstone & Co.	158
L. Littlejohn & Co., Inc.	8,352
Meyer & Brown, Inc.	2,375
Poel & Kelly, Inc.	100
Vernon Metal & Produce Co., Inc.	1,127
Chas. T. Wilson Co., Inc.	1,603
APRIL 24. By "Eglantine," Holland.	
Vernon Metal & Produce Co., Inc.	156
APRIL 24. By "President Adams," Far East.	
H. A. Astlett & Co.	792
Baird Rubber & Trading Co., Inc.	150
Paul Bertuch & Co.	372 pkgs.
The Fisk Rubber Co.	784
General Rubber Co.	120
J. T. Johnstone & Co., Inc.	165
L. Littlejohn & Co., Inc.	865
Meyer & Brown, Inc.	680
H. Muehlstein & Co., Inc.	*730
Poel & Kelly, Inc.	2,604
Chas. T. Wilson Co., Inc.	900
APRIL 25. By "Anchoria," Far East.	
L. Littlejohn & Co., Inc.	3,228
Meyer & Brown, Inc.	2,279
APRIL 25. By "Rhine Maru," Far East.	
The Fisk Rubber Co.	431
APRIL 25. By "Rotterdam," Far East.	
Poel & Kelly, Inc.	85
APRIL 26. By "Eastern Prince," Far East.	
H. A. Astlett & Co.	782
Hood Rubber Co.	*50
L. Littlejohn & Co., Inc.	8,352
H. Muehlstein & Co., Inc.	802
H. Muehlstein & Co., Inc.	*290
APRIL 26. By "Kendall Castle," Far East.	
H. A. Astlett & Co., Inc.	280
Hood Rubber Co.	*343
Meyer & Brown, Inc.	3,181
H. Muehlstein & Co., Inc.	289
Chas. T. Wilson Co., Inc.	655
APRIL 27. By "American Merchant," England.	
H. A. Astlett & Co.	75
Baird Rubber & Trading Co., Inc.	506
General Rubber Co.	20
L. Littlejohn & Co., Inc.	553
Chas. T. Wilson Co., Inc.	527
APRIL 27. By "Anchoria," Far East.	
H. A. Astlett & Co.	400
Poel & Kelly, Inc.	726
APRIL 27. By "Carmania," England.	
Poel & Kelly, Inc.	155
APRIL 27. By "London Exchange," Europe.	
Baird Rubber & Trading Co., Inc.	604
APRIL 27. By "Montana," Europe.	
H. A. Astlett & Co.	202
APRIL 28. By "Kohnan Maru," Hamburg.	
Vernon Metal & Produce Co., Inc.	100
APRIL 29. By "Baltic," Europe.	
Baird Rubber & Trading Co., Inc.	128
APRIL 29. By "City of Bedford," Far East.	
Poel & Kelly, Inc.	*300
H. Muehlstein & Co., Inc.	320
H. Muehlstein & Co., Inc.	*100
APRIL 29. By "Scythian," Europe.	
H. A. Astlett & Co.	*56
APRIL 30. By "Kendall Castle," Far East.	
The Fisk Rubber Co.	225
L. Littlejohn & Co., Inc.	3,597
Poel & Kelly, Inc.	1,485
Vernon Metal & Produce Co., Inc.	824
APRIL 30. By "Vellavia," England.	
Poel & Kelly, Inc.	6,475
MAY 1. By "Celebes," Far East.	
H. A. Astlett & Co.	132
H. A. Astlett & Co.	*386
Baird Rubber & Trading Co., Inc.	246
General Rubber Co.	3,879
J. T. Johnstone & Co., Inc.	124
L. Littlejohn & Co., Inc.	3,712
Meyer & Brown, Inc.	1,019
Poel & Kelly, Inc.	1,609
Vernon Metal & Produce Co., Inc.	421
Chas. T. Wilson Co., Inc.	213
MAY 1. By "Hartside," Far East.	
Baird Rubber & Trading Co., Inc.	990
Baird Rubber & Trading Co., Inc.	*150
H. Muehlstein & Co., Inc.	*450
MAY 1. By "Kendall Castle," Far East.	
Baird Rubber & Trading Co., Inc.	458
Baird Rubber & Trading Co., Inc.	*250
General Rubber Co.	2,655
MAY 2. By "Veendam," Holland.	
Meyer & Brown, Inc.	48
Poel & Kelly, Inc.	78
MAY 2. By "Zeeland," Belgium.	
L. Littlejohn & Co., Inc.	93
Poel & Kelly, Inc.	100
MAY 4. By "Knight Companion," Far East.	
H. A. Astlett & Co.	1,101
H. A. Astlett & Co.	*262
Hood Rubber Co.	*252
H. Muehlstein & Co., Inc.	225
Poel & Kelly, Inc.	*150
MAY 4. By "Maine," Europe.	
H. A. Astlett & Co.	22
Baird Rubber & Trading Co., Inc.	122
General Rubber Co.	516
L. Littlejohn & Co., Inc.	1,110
Poel & Kelly, Inc.	692
Vernon Metal & Produce Co., Inc.	807
MAY 4. By "Minnetonka," Europe.	
H. A. Astlett & Co.	132
Baird Rubber & Trading Co., Inc.	855
J. T. Johnstone & Co., Inc.	754
L. Littlejohn & Co., Inc.	9,950
Meyer & Brown, Inc.	527
H. Muehlstein & Co., Inc.	292
Vernon Metal & Produce Co., Inc.	747
Chas. T. Wilson Co., Inc.	102
MAY 4. By "Vardulia," Europe.	
H. A. Astlett & Co.	223
Poel & Kelly, Inc.	1,784
Vernon Metal & Produce Co., Inc.	109
MAY 5. By "American Banker," London.	
Baird Rubber & Trading Co., Inc.	1,168
MAY 5. By "Samaria," Europe.	
Baird Rubber & Trading Co., Inc.	187
L. Littlejohn & Co.	1,355
Meyer & Brown, Inc.	94
H. Muehlstein & Co., Inc.	93
Vernon Metal & Produce Co., Inc.	129
MAY 6. By "Rhine Maru," Far East.	
H. A. Astlett & Co.	274
Baird Rubber & Trading Co., Inc.	150
Paul Bertuch & Co.	pkgs. 284
General Rubber Co.	604
Hood Rubber Co.	367
J. T. Johnstone & Co., Inc.	102
L. Littlejohn & Co., Inc.	1,457
Meyer & Brown, Inc.	1,064
H. Muehlstein & Co., Inc.	50
Poel & Kelly, Inc.	881
MAY 7. By "Fenchurch," France.	
H. Muehlstein & Co., Inc.	168
MAY 7. By "Lorenzo," Far East.	
The Fisk Rubber Co.	100
MAY 7. By "President Garfield," Far East.	
Baird Rubber & Trading Co., Inc.	65
Paul Bertuch & Co.	pkgs. 244
Hood Rubber Co.	*1,508
J. T. Johnstone & Co., Inc.	150
L. Littlejohn & Co., Inc.	875
Meyer & Brown, Inc.	1,081
H. Muehlstein & Co., Inc.	250
H. Muehlstein & Co., Inc.	*50
Poel & Kelly, Inc.	1,957
Chas. T. Wilson Co., Inc.	784
MAY 7. By "Silver Fir," Far East.	
H. A. Astlett & Co.	182
Baird Rubber & Trading Co., Inc.	359
General Rubber Co.	1,550
Hood Rubber Co.	*455
L. Littlejohn & Co., Inc.	2,643
Meyer & Brown, Inc.	1,030
H. Muehlstein & Co., Inc.	238
Poel & Kelly, Inc.	855
Chas. T. Wilson Co., Inc.	112
MAY 8. By "Knight Companion," Far East.	
Baird Rubber & Trading Co., Inc.	1,820
The Fisk Rubber Co.	446
General Rubber Co.	2,052
J. T. Johnstone Co., Inc.	745
L. Littlejohn & Co., Inc.	6,679
Meyer & Brown, Inc.	4,678
Poel & Kelly, Inc.	6,603
Vernon Metal & Produce Co., Inc.	429
Chas. T. Wilson Co., Inc.	735
MAY 8. By "Minnewaska," London.	
Poel & Kelly, Inc.	593
MAY 8. By "Valacia," Europe.	
H. A. Astlett & Co.	238
Poel & Kelly, Inc.	882
MAY 9. By "Chattanooga City," Far East.	
H. A. Astlett & Co.	700
Baird Rubber & Trading Co., Inc.	879
General Rubber Co.	4,853
Hood Rubber Co.	277
J. T. Johnstone & Co., Inc.	250
L. Littlejohn & Co., Inc.	3,066
Meyer & Brown, Inc.	1,467
H. Muehlstein & Co., Inc.	320
H. Muehlstein & Co., Inc.	*100
Poel & Kelly, Inc.	3,196
Vernon Metal & Produce Co., Inc.	350

* Arrived at Boston.

	Cases
MAY 9. By "Comeric," Far East.	
Baird Rubber & Trading Co., Inc.	224
Baird Rubber & Trading Co., Inc.	*330
General Rubber Co.	412
L. Littlejohn & Co., Inc.	2,545
MAY 9. By "Euryades," Far East.	
Baird Rubber & Trading Co., Inc.	235
Baird Rubber & Trading Co., Inc. Penang Scrap.....tons	*30
Baird Rubber & Trading Co., Inc.	*160
Hood Rubber Co.	*203
H. Muehlstein & Co., Inc.	239
MAY 10. By "London Mariner," England.	
L. Littlejohn & Co., Inc.	540
MAY 11. By "Celtic," Europe.	
Baird Rubber & Trading Co., Inc.	772
L. Littlejohn & Co., Inc.	117
MAY 11. By "Hartside," Far East.	
General Rubber Co.	429
L. Littlejohn & Co., Inc.	2,542
Meyer & Brown, Inc.	630
Poel & Kelly, Inc.	866
Chas. T. Wilson Co., Inc.	424
MAY 11. By "Pipestone County," France.	
L. Littlejohn & Co., Inc.	615
MAY 12. By "Lorenzo," Far East.	
General Rubber Co.	1,148
I. T. Johnstone & Co., Inc.	764
L. Littlejohn & Co., Inc.	5,937
Meyer & Brown, Inc.	3,694
Poel & Kelly, Inc.	10,334
Vernon Metal & Produce Co., Inc.	538
Chas. T. Wilson Co., Inc.	41
MAY 13. By "American Farmer," Europe.	
Baird Rubber & Trading Co., Inc.	2,095
L. Littlejohn & Co., Inc.	4,463
Meyer & Brown, Inc.	837
H. Muehlstein & Co., Inc.	263
Chas. T. Wilson Co., Inc.	440
MAY 13. By "Lorenzo," Far East.	
Baird Rubber & Trading Co., Inc.	969
Baird Rubber & Trading Co., Inc.	*96
H. Muehlstein & Co., Inc.	454
MAY 14. By "Bengal Maru," Far East.	
L. Littlejohn & Co., Inc.	119
Meyer & Brown, Inc.	410
MAY 14. By "Euryades," Far East.	
General Rubber Co.	4,368
J. T. Johnstone & Co., Inc.	137
Meyer & Brown, Inc.	2,980
Poel & Kelly, Inc.	2,659
Vernon Metal & Produce Co.	354
Chas. T. Wilson Co., Inc.	1,088
MAY 15. By "Birmingham City," Far East.	
General Rubber Co.	30
Meyer & Brown, Inc.	136
H. Muehlstein & Co., Inc.	66
MAY 15. By "Caronia," Europe.	
Baird Rubber & Trading Co., Inc.	*118
MAY 15. By "New Amsterdam," Far East.	
H. Muehlstein & Co., Inc.	304
Poel & Kelly, Inc.	21
MAY 15. By "Stockwell," Far East.	
H. Muehlstein & Co., Inc.	195
H. Muehlstein & Co., Inc.	*330
MAY 18. By "Adriatic," Europe.	
Baird Rubber & Trading Co., Inc.	110
Meyer & Brown, Inc.	239
MAY 18. By "Barbadian," Europe.	
Baird Rubber & Trading Co., Inc.	*523
MAY 18. By "Wray Castle," Far East.	
Baird Rubber Trading Co., Inc.	251
General Rubber Co.	3,751
Meyer & Brown, Inc.	2,658
Poel & Kelly, Inc.	992

*Arrived at Boston.

Africans

	Cases
APRIL 17. By "Sarcoxie," Europe.	
L. Littlejohn & Co., Inc.	598
APRIL 27. By "Carmania," Europe.	
L. Littlejohn & Co., Inc.	462
APRIL 28. By "Kohnan Maru," Europe.	
L. Littlejohn & Co., Inc.	345
MAY 11. By "Caronia," Europe.	
L. Littlejohn & Co., Inc.	40
MAY 11. By "Pipestone County," Europe.	
H. Muehlstein & Co., Inc.	605

Balata

	Cases
APRIL 17. By "Francis," South America.	
Paul Bertuch & Co.	4
APRIL 28. By "Maraval," South America.	
Middleton & Co., Ltd.....bales	25
APRIL 28. By "Polycarp," South America.	
H. A. Astlett & Co.	165
MAY 14. By "Bernini," South America.	
Paul Bertuch & Co.	4

Centrals

APRIL 18. By "Colombia," South America.	
Ultramares Corp.....bales	12
MAY 9. By "Alvarado," South America.	
Ultramares Corp.....bales	111

Guayule

APRIL 16. By "Railways," Mexico.	
Continental Rubber Co. of New York	1,060
APRIL 19. By "S. B. Lund," Mexico.	
Continental Rubber Co. of New York	560
APRIL 23. By "Agivistar," Mexico.	
Continental Rubber Co. of New York	560
APRIL 23. By "Railways," Mexico.	
Continental Rubber Co. of New York	500
MAY 1. By "Railways," Mexico.	
Continental Rubber Co. of New York	500
MAY 4. By "Panuco," Mexico.	
Continental Rubber Co. of New York	1,120
MAY 8. By "Railways," Mexico.	
Continental Rubber Co. of New York	500
MAY 17. By "Antilla," Mexico.	
Continental Rubber Co. of New York	1,120

Rubber Latex

	Lbs.
APRIL 30. By "Kendal Castle," Far East.	
General Rubber Co.	110,479
MAY 6. By "Silver Fir," Far East.	
General Rubber Co.	101,790
MAY 9. By "Chattanooga City," Far East.	
General Rubber Co.	201,044
MAY 17. By "Wray Castle," Far East.	
General Rubber Co.	125,168

Rubber Statistics for the Dominion of Canada

Imports of Crude and Manufactured Rubber

	February, 1925		Eleven Months Ended February, 1925 April-February	
UNMANUFACTURED	Pounds	Value	Pounds	Value
Rubber, gutta percha, etc., From United Kingdom	571,523	$184,655	4,610,614	$1,269,781
United States	2,277,483	741,813	22,637,332	6,151,152
Belgium	.....	.....	50,122	11,393
Straits Settlements	11,200	3,879	1,721,833	390,110
Dutch East Indies	.....	.....	78,474	19,855
France	2,200	502	26,649	5,766
Other countries	.....	.....	.....	.....
Totals	2,862,406	$930,849	29,125,024	$7,848,057
Rubber, recovered	365,207	47,399	2,610,706	274,092
Rubber, powdered and rubber or gutta percha scrap	728,678	30,119	3,909,679	151,767
Balata	1,046	821	5,307	4,067
Rubber substitutes	72,174	6,509	670,253	178,333
Totals	4,029,511	$1,015,697	36,320,969	$8,456,316
PARTLY MANUFACTURED				
Hard rubber sheets and rods	18,667	$7,490	169,545	$80,892
Hard rubber tubes	.....	.....	.....	10,179
Rubber thread not covered	11,113	11,942	87,358	92,465
Totals	29,780	$19,432	256,903	$183,536
MANUFACTURED				
Belting	.....	$17,612	.....	$148,697
Hose	.....	10,995	.....	104,406
Packing	.....	3,383	.....	36,237
Boots and shoes.....*pairs*	7,338	10,657	155,039	162,251
Clothing, including waterproofed	.....	21,231	.....	154,507
Gloves	.....	1,465	.....	13,988
Hot water bottles	.....	540	.....	9,702
Tires, solid .....*number*	155	4,217	6,673	61,390
Tires, pneumatic .....*number*	2,202	24,552	46,804	516,617
Inner tubes .....*number*	2,017	4,514	25,910	61,170
Elastic, round or flat	.....	15,928	.....	215,263
Mats and matting	.....	1,723	.....	18,064
Cement	.....	3,011	.....	44,334
Other rubber manufactures	.....	111,946	.....	1,341,257
Totals	.....	$231,774	.....	$2,887,883
Totals, rubber imports	.....	$1,266,903	.....	$11,527,735

Exports of Domestic and Foreign Rubber Goods

	February, 1925		Eleven Months Ended February, 1925 April-February	
	Produce of Canada Value	Re-exports of Foreign Goods Value	Produce of Canada Value	Re-exports of Foreign Goods Value
UNMANUFACTURED				
Crude and waste rubber	$13,052	.....	$105,525	.....
Totals	$13,052	.....	$105,525	.....
MANUFACTURED				
Belting	$45,603	.....	$370,601	.....
Canvas shoes with rubber soles	120,179	.....	1,611,021	.....
Boots and shoes	109,365	.....	913,263	.....
Clothing, including waterproofed	3,529	.....	24,809	.....
Hose	10,441	.....	154,073	.....
Tires, casings	737,410	.....	5,432,497	.....
Inner tubes	120,985	.....	886,107	.....
Solid	24,751	.....	194,387	.....
Other rubber manufactures	41,091	$3,188	328,070	$119,399
Totals	$1,213,354	$3,188	$9,914,828	$119,399
Totals, rubber exports	$1,226,406	$3,188	$10,020,353	$119,399

A RECENT ARTICLE IN *Commerce Reports* CALLS ATTENTION TO the improvement during 1924 in Italy's foreign trade, when both imports and exports of commodities increased as compared with 1923. In commenting in detail upon this development the writer makes the following statement: "A gain in exports of rubber manufactures is also noteworthy, their 1924 value reaching 260,000,000 lire as against 185,000,000 lire in 1923. Practically all of this advance is accounted for by a 72,000,000-lire increase in shipments of automobile tires, bringing their total export value to 199,000,000 lire."

INDIA RUBBER WORLD
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